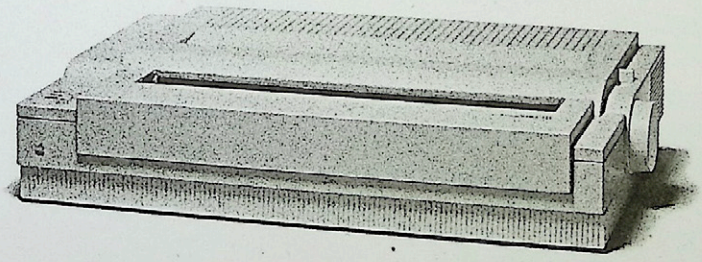
ImageWriter® LQ Owner's Guide



Apple® ImageWriter LQ

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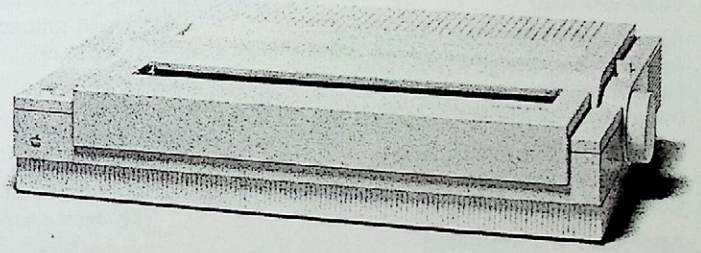
Apple® ImageWriter® LQ Owner's Guide



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Radio and television interference

The equipment described in this manual generates and uses radio-frequency energy. If it is not installed and used properly—that is, in strict accordance with Apple's instructions—it may cause interference with radio and television reception.

This equipment has been tested and complies with the limits for a Class B computing device in accordance with the specifications in Subpart J, Part 15, of FCC rules. These rules are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that the interference will not occur in a particular installation, especially if a "rabbit-ear" television antenna is used. (A rabbit-ear antenna is the telescoping-rod type usually found on television receivers.)

You can determine whether your computer is causing interference by turning it off. If the interference stops, it was probably caused by the computer or its peripheral devices.

If your computer system does cause interference to radio or television reception, you can try to correct the interference by using one or more of the following measures:

- ☐ Turn the television or radio antenna until the interference stops.
- ☐ Move the computer to one side or the other of the television or radio.
- ☐ Move the computer farther away from the television or radio.
- ☐ Plug the computer into an outlet that is on a different circuit than the television or radio. (That is, make certain the computer and the radio or television are on circuits controlled by different circuit breakers or fuses.)
- ☐ Consider installing a rooftop television antenna with a coaxial cable lead-in between the antenna and the television.

If necessary, consult your authorized Apple dealer or an experienced radio/television technician for additional suggestions.

You may find helpful the following booklet, prepared by the Federal Communications Commission: "How to Identify and Resolve Radio-TV Interference Problems." This booklet is available from the U.S. Government Printing Office, Washington, DC 20402.

Important This product was FCC-certified under test conditions that included use of shielded cables and connectors between system components. It is important that you use shielded cables and connectors to reduce the possibility of causing interference to radios, television sets, and other electronic devices. For Apple peripheral devices, you can obtain the proper shielded cable from your authorized Apple dealer. For non-Apple peripheral devices, contact the manufacturer or dealer for assistance.

Preface

About This Manual

This manual gives you all the information you need to set up your ImageWriter® LQ, connect it to your Apple® computer, and use it to print documents, envelopes, forms, and labels.

The manual takes you step by step through each procedure, using photographs and illustrations to help you locate unfamiliar printer parts. It also provides some reference information and tips to help you get the most out of your ImageWriter LQ.

This manual assumes you are familiar with your Macintosh™ or Apple II computer. If you're not, it's best to consult your computer user manuals before attempting to use the ImageWriter LQ.

Important If you're not planning to read the rest of this manual, read this.

For best printing results with a Macintosh computer and ImageWriter LQ, your System file must contain two font sizes for each font you use:

- A "screen font" in the size (1X) you want for your screen display and final output.
- A "printer font" three times (3X) the size of the screen font.

See "Working With Macintosh Fonts for the ImageWriter LQ" in Chapter 3 for more information.

Manual overview

Here's a quick overview of the manual:

- Chapter 1, "Meet the ImageWriter LQ," introduces you to the printer's features, parts, and accessories.
- Chapter 2, "Setting Up the ImageWriter LQ," shows you how to set up and start the printer, load paper, and test the print quality of your ImageWriter LQ.
- Chapter 3, "Connecting the ImageWriter LQ to Your Macintosh Computer," explains how to install the printer software, connect the printer to your Macintosh computer, and work with Macintosh fonts on the ImageWriter LQ. The chapter also provides some general information on printing documents with your Macintosh and ImageWriter LQ.
- Chapter 4, "Connecting the ImageWriter LQ to Your Apple II," helps you choose the correct cable; explains how to connect to the Apple IIGS™, Apple IIc, and Apple IIe computers; and provides some general information on printing documents with your Apple II and ImageWriter LQ.
- Chapter 5, "Connecting the ImageWriter LQ to Your AppleTalk Network," explains card installation, network connection, and software installation and testing.
- Chapter 6, "Using the ImageWriter LQ Control Panel," explains how to use each of the control panel buttons on the top of the printer.
- Chapter 7, "Working With Paper," covers paper placement, paper-feeding choices, and working with margins and print alignment.
- Chapter 8, "Troubleshooting," lists common difficulties and possible solutions.
- Chapter 9, "ImageWriter LQ Care and Maintenance," gives you hints on creating an efficient working environment and explains cleaning, service, and support.

- Appendix A, "Using the Cut Sheet Feeder With Your ImageWriter LQ" provides setting up and installation instructions for the Cut Sheet Feeder bins and envelope attachment.
- Appendix B, "Using the Color Option With Your ImageWriter LQ," gives general information about color.
- Appendix C, "ImageWriter LQ Printer and Interface Specifications," provides printer, DIP switch, and interface specifications.
- Appendix D, "ASCII Codes," contains American Standard Code for Information Interchange tables.
- Appendix E, "Controlling Printer Output Directly: For Apple II Users," is for users who need to add or change printer settings in packaged software or in their own programs. It explains changing settings with DIP switches and contains tables of commonly used control characters and escape sequences.
- A glossary of printer terms, an index, and a quick reference card for Apple II users are at the end of the manual.

If you are familiar with printers, use Chapter 2 and then Chapter 3, 4, or 5 to set up and connect your ImageWriter LQ quickly. Refer to the other chapters as necessary.

If you are not familiar with printers, use Chapter 2 and then Chapter 3, 4, or 5 to set up and connect your ImageWriter LQ. Read Chapters 1, 6, and 7 to learn how to use the ImageWriter LQ.

For a detailed technical discussion of the ImageWriter LQ, see the *ImageWriter LQ Reference,* published by Addison-Wesley and available wherever fine computer books are sold.

Take a few minutes to fill out the Tell Apple card at the back of the manual. Let us know what you liked about the manual and the printer, and what you'd like us to do differently.

Aids to understanding

Look for these visual cues throughout the manual:

- *Note:* Text set off in this manner presents notes, reminders, and hints.

Important Text set off in this manner—and with a tag in the margin—presents important information.

Warning Warnings like this indicate potential problems.

Computer words and phrases appear in boldface type when they are introduced. Sometimes additional information about the term may appear in the margin; the term is always defined in the Glossary.

Chapter 1

Meet the ImageWriter LQ

The Apple ImageWriter LQ is a wide carriage, **impact dot matrix printer.** It provides you with a full range of features needed to produce professional quality printing. These features include

- flexible paper handling:
  - push or pull tractor for pin-feed paper
  - pull tractor for labels, heavy stock, and multipart forms fed through the bottom paper-feed slot
  - paper switching—from pin feed to single sheet—without unloading
  - automatic paper loading and paper backout
  - one, two, or three bin optional Cut Sheet Feeder with envelope attachment
- four full font sets on disk for Macintosh computers:
  - Times® family
  - Helvetica® family
  - Courier family
  - Symbol
- wide range of text formatting, character, and line spacing options that reproduce software capabilities and are programmable on Apple II computers:
  - five **built-in fonts**
  - eight sets of national language characters
  - three levels of internal print quality and speed accessed from the control panel: Letter Quality, Near Letter Quality, and Draft Quality
  - boldface type
  - color printing and graphics
  - underlining
  - half-heights, subscripts, and superscripts in Near Letter Quality and Letter Quality
  - character pitch from 4.5 to 17 characters per inch

ImageWriter LQ parts

This section provides a visual introduction to the major external and internal ImageWriter LQ parts. As you set up, connect, and use your printer, you'll find detailed illustrations in the other chapters to guide you in performing specific tasks.

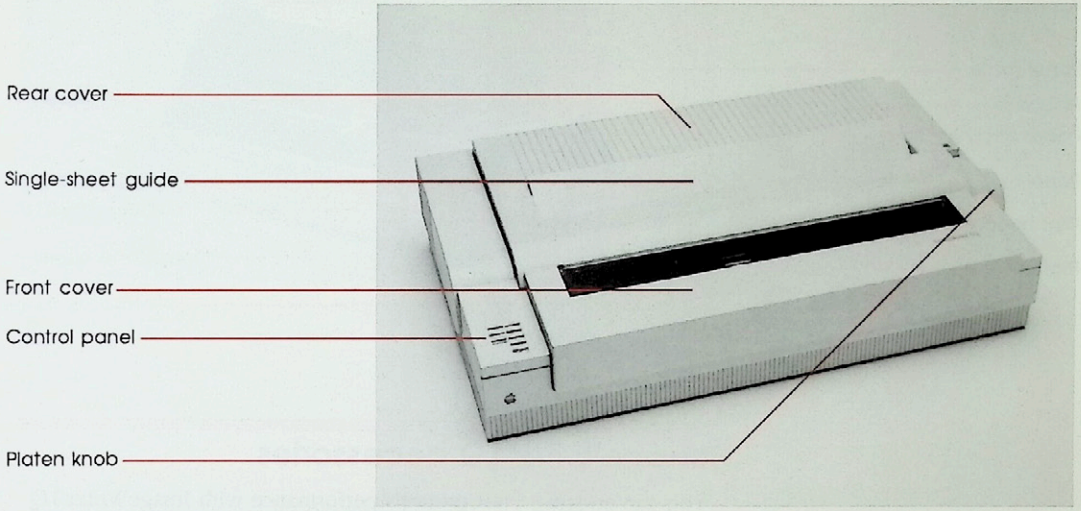


Figure 1-1
ImageWriter LQ major parts

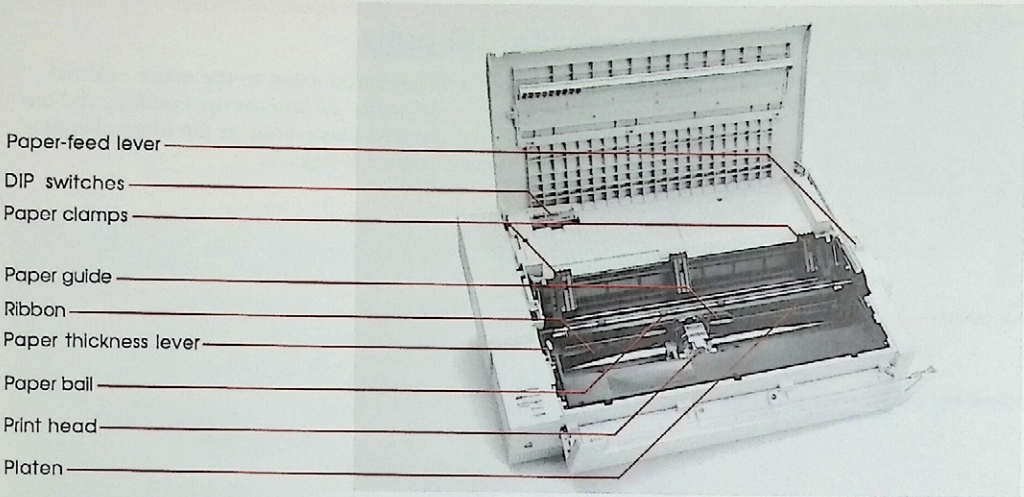


Figure 1-2
Inside the ImageWriter LQ

ImageWriter LQ accessories

You can enhance your printer's performance with ImageWriter LQ accessories.

The ImageWriter II/LQ AppleTalk Option

The ImageWriter II/LQ AppleTalk® Option promotes shared resources in offices and schools. With the AppleTalk Option card installed, one ImageWriter LQ can serve as many as 31 computers on an AppleTalk network. See Chapter 5 for installation instructions.

The ImageWriter LQ Cut Sheet Feeder

You can attach the ImageWriter LQ Cut Sheet Feeder for automatic feeding of stationery, letterhead, and envelopes. You can use the **Cut Sheet Feeder** with one, two, or three bin attachments and the **envelope attachment.** The sheet feeder feeds each sheet as it is needed, and collates and stacks the printed material.

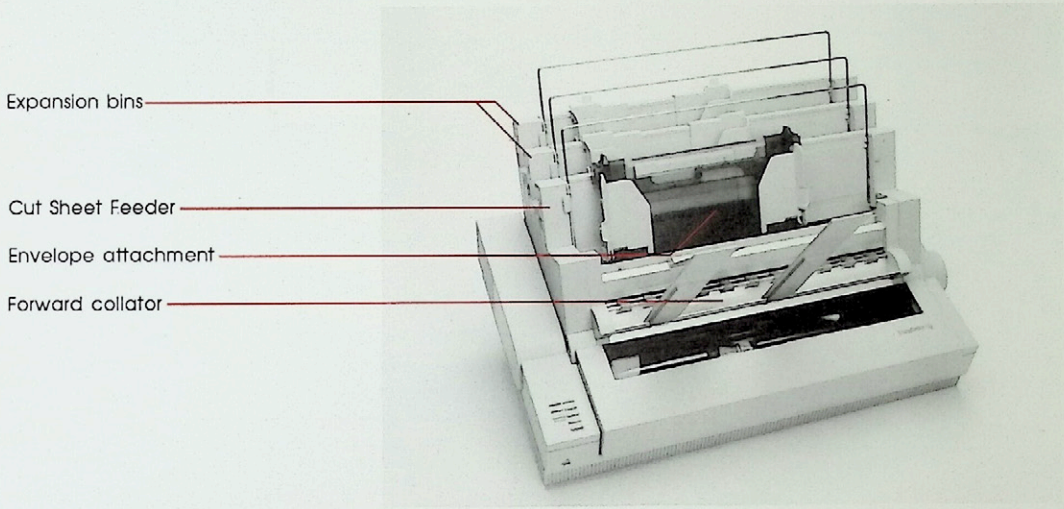


Figure 1-3
ImageWriter LQ with Cut Sheet Feeder attached

Chapter 2

Setting Up the ImageWriter LQ

This chapter shows you how to

- unpack your ImageWriter LQ
- install the ribbon and the paper separator
- start the ImageWriter LQ
- load paper
- run the self-test to check print quality and make sure that the printer is working correctly

Once you have started up and tested your ImageWriter LQ, you're ready to connect it to your computer. If you are connecting it to a Macintosh, see Chapter 3; if you are connecting it to an Apple II, see Chapter 4; if you are connecting it to an AppleTalk network, see Chapter 5.

A checklist

To set up and use your ImageWriter LQ, you have seven major tasks to accomplish. The list that follows enumerates the steps and tells you which chapter covers each topic. See the table of contents or the index for other topic references.

Setting up tasks	Where to find information
1. Unpacking	Chapter 2
2. Installing ribbon cartridge	Chapter 2
3. Plugging in and starting printer	Chapter 2
4. Loading paper	Chapter 2
5. Testing printer	Chapter 2
6. Connecting printer to computer:	
Macintosh computer	Chapter 3
AppleTalk network	Chapter 5, then Chapter 3
Apple II computer	Chapter 4
7. Printing documents:	
with a Macintosh computer	Chapter 3
with an Apple II computer	Chapter 4

Unpacking the ImageWriter LQ

1. If you haven't already done so, remove the ImageWriter LQ from its carton.

   The printer weighs about 38 pounds, so be sure not to strain your back. Reach *under* the printer with both hands and lift upward. For the moment, put the printer in an open work area near the computer where you can easily get to the back side of the printer.

2. Remove all packing materials from the printer and return them to the carton. Save the shipping carton and packing materials in case you need to store or ship your printer.

3. Unwrap everything. Place the printer ribbon, power cord, and wire **paper separator** beside the printer. See Figure 2-1.

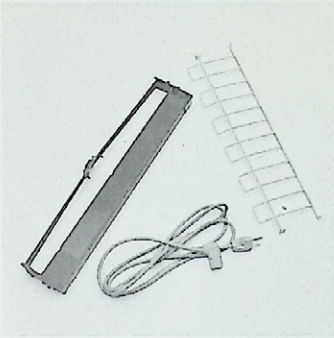


Figure 2-1
Printer ribbon, power cord, and paper separator

4. Remove all pieces of tape from the printer.

5. Open the front cover by grasping its sides and rotating it up and towards yourself. Hinges hold it in an open position. See Figure 2-2.

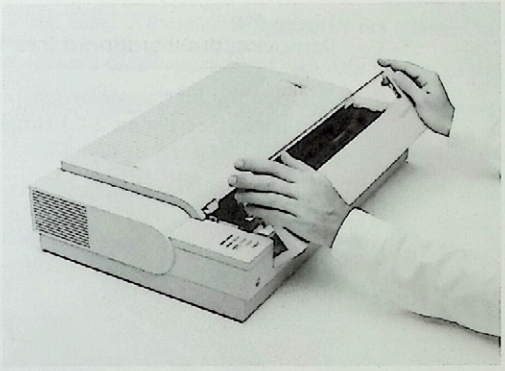


Figure 2-2
Opening the front cover

6. Remove the cardboard inserts from inside the printer. See Figure 2-3.

One piece of cardboard keeps the print head from sliding around and getting damaged; the other piece protects the main housing and rear cover. Save the cardboard pieces with the other packing materials, and reinsert them if you ever need to ship your printer.

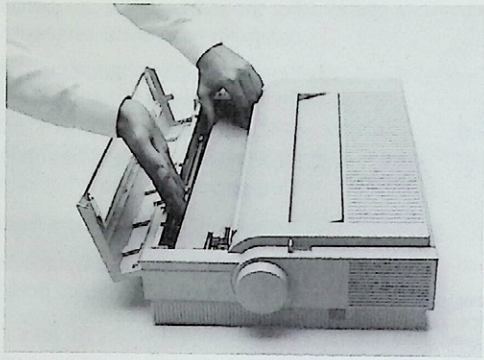


Figure 2-3
Removing the cardboard inserts

7. Open the rear cover by grasping its sides, lifting up, and pivoting it back. (See Figure 2-4.) Hinges hold it in an open position.

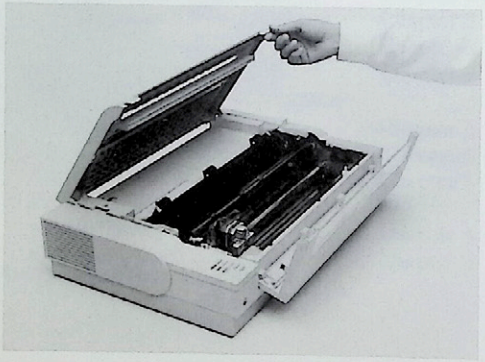


Figure 2-4
Opening the rear cover

Installing the ribbon cartridge

ImageWriter LQ ribbons are continuous-loop fabric ribbons. They will not run out, but they will wear out after a lot of use. Change the ribbon when characters look faded.

A black ribbon is provided with your printer; color ribbons can be purchased separately. Both are installed in the same way.

Here's how to install a ribbon:

1. Remove the ribbon cartridge from the plastic bag. Pull off the styrofoam protector from the ribbon clip-in guide. See Figure 2-5.

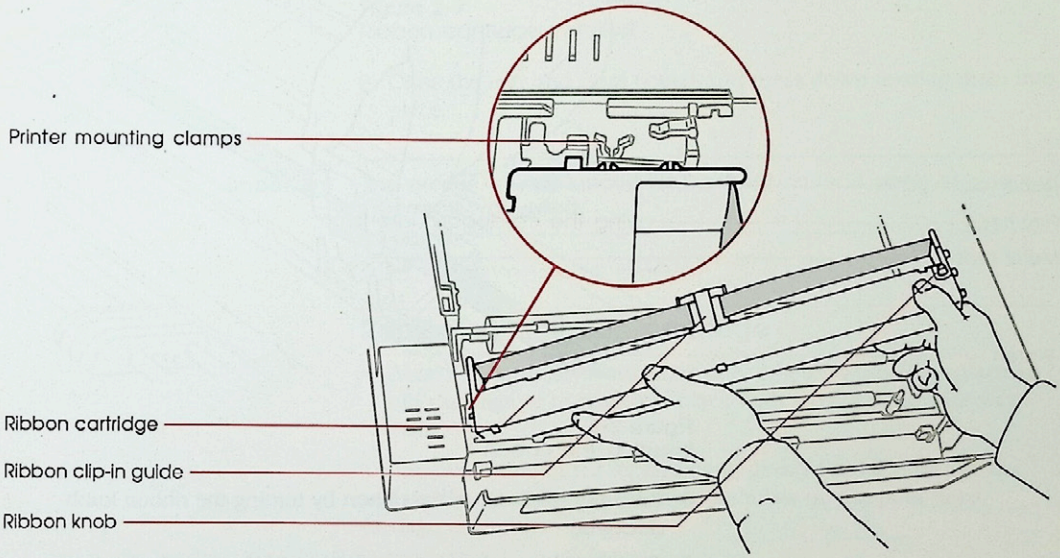


Figure 2-5
Positioning the ribbon cartridge

2. Locate the ribbon knob on the ribbon cartridge (it turns clockwise). The knob indicates the top side of the cartridge. See Figure 2-5.

3. Holding the ribbon cartridge top side up, lower it into the printer. See Figure 2-5.
4. When the ribbon is in position, gently press the plastic knobs on either end of the cartridge into the mounting clamps on the printer so that the ribbon snaps into place. See Figure 2-5.
5. Holding the ribbon clip-in guide, slide the two plastic tubes halfway onto the metal rods between the print head and the platen. See Figure 2-6.

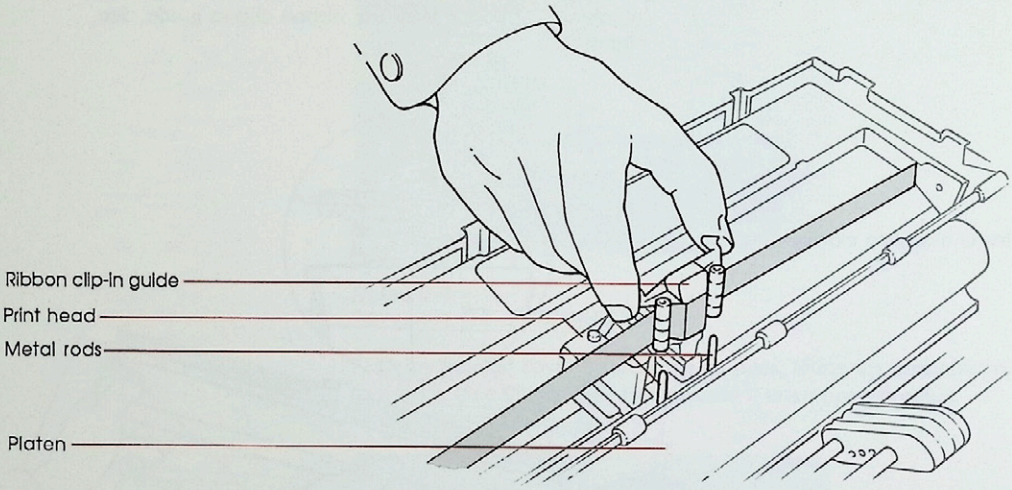


Figure 2-6
Inserting the ribbon

6. Take any slack out of the ribbon by turning the ribbon knob clockwise.
7. Slide the ribbon clip-in guide the rest of the way down, making sure that the ribbon doesn't bunch, and snap the tubes into place. (See Figure 2-7.) Take any slack out of the ribbon by turning the ribbon knob clockwise again. Your ribbon is now installed.

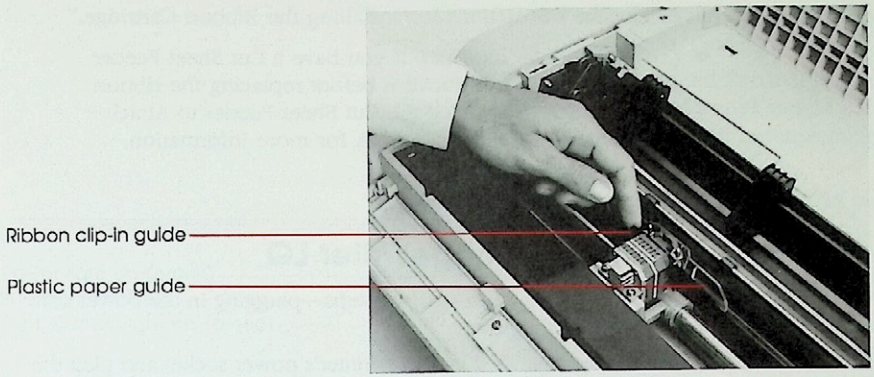


Figure 2-7
Ribbon cartridge installed

8. Close the rear and front covers and press down to snap them into place.

Important The printer will not function if the front cover is open or incorrectly mounted.

Replacing a ribbon cartridge

❖ *Note:* Follow these instructions only when it's time to replace an old cartridge or to replace a black with a color ribbon (or vice versa).

To remove a ribbon for replacement, gently lift the cartridge out and unclip the ribbon guide from the tubes on the print head carriage assembly.

Warning Use only Apple or Apple-approved ribbons. Coarse weave ribbons can cause print wire breakage.

To install another ribbon cartridge:

1. Turn the printer on to let it cycle through the print head movement, then turn the printer off.

   This ensures that the ribbon shift mechanism is in the down position. If it's not, you may not be able to get the cartridge all the way in.

2. Follow the instructions in "Installing the Ribbon Cartridge."

❖ *Cut Sheet Feeder attached?* If you have a Cut Sheet Feeder attached, you must remove it before replacing the ribbon cartridge. See "Removing the Cut Sheet Feeder to Attach Additional Bins" in Appendix A for more information.

Starting the ImageWriter LQ

Starting the printer takes just two steps—plugging in the power cord and turning on the power.

1. Plug the power cord into the printer's power socket and plug the three-pronged end into the power outlet. See Figure 2-8.

Warning

This equipment is intended to be electrically grounded. Your ImageWriter LQ is equipped with a three-wire grounding plug—a plug having a third (grounding) pin. This plug will fit only a grounding-type AC outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact a licensed electrician to replace the outlet with a properly grounded outlet.

Do not defeat the purpose of the grounding plug!

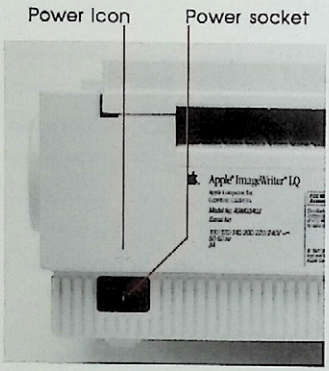


Figure 2-8
ImageWriter LQ power socket

❖ *Looking for power sources:* When considering where to put your Apple system, keep in mind that the ImageWriter LQ requires its own power source. Depending on which Apple system you have, you may need three or more electrical outlets nearby—one each for the computer, monitor, and printer. Many people prefer to plug their computer equipment into a special power strip equipped with protection against surges in electrical current. See your authorized Apple dealer for information about power strips.

Warning

Electrical equipment may be hazardous if misused. Operation of this product, or similar products, must always be supervised by an adult. Do not allow children access to the interior of any electrical product and do not permit them to handle any cables.

2. Press the **On/Off switch** on the right side of the printer, below and behind the platen knob. (See Figure 2-9.)

   The green **Power light,** the red **Error light,** and the **Print Quality light** on the **control panel** should light up. (See Figure 2-10.) The Error light is on because the printer has no paper loaded yet.

   When you turn the printer on, the print head moves to the left and then towards the center.

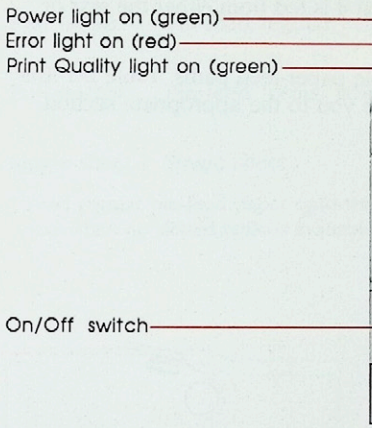


Figure 2-9
The On/Off switch

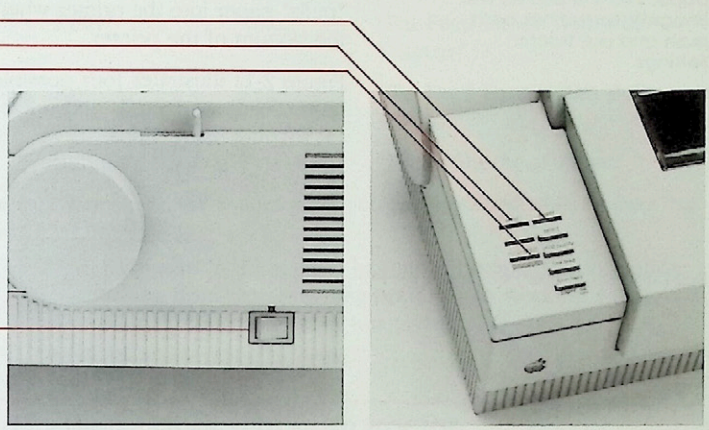


Figure 2-10
The control panel

If nothing happens, check the following:

- ☐ Is the front cover in place?
- ☐ Press the On/Off switch again. Is the printer on now?
- ☐ Check the power cord connections. Is everything firmly plugged in?
- ☐ Has anything interrupted power to the wall socket or power strip?
- ☐ If your power strip has an on/off switch, is it on?
- ☐ Check the **Select light.** If it's on, press the Select button to turn it off. (The Select light should not go on the first time you turn on the printer; if it did, something may be wrong with the printer.)

If you're still having problems, see Chapter 8, "Troubleshooting."

Loading paper

Pin-feed paper is also known as computer paper, fan-fold paper, and continuous-form paper.

The **tractor** is the device that transports pin-feed paper into the printer. The ImageWriter LQ has both push and pull tractor settings.

This section shows you how to load either **pin-feed paper** or **single-sheet paper** for the printer self-test.

When you load paper for the first time, choose the method of paper feeding that most closely matches how you'll use paper on a regular basis. The **push tractor** "pushes" pin-feed paper under the platen when the paper is fed into the rear of the printer. The **pull tractor** "pulls" paper into the printer when it is fed from either the rear or the bottom of the printer.

Figure 2-11 illustrates four possible paper-feed paths. Table 2-1 lists paper-feeding methods and refers you to the appropriate section for loading instructions.

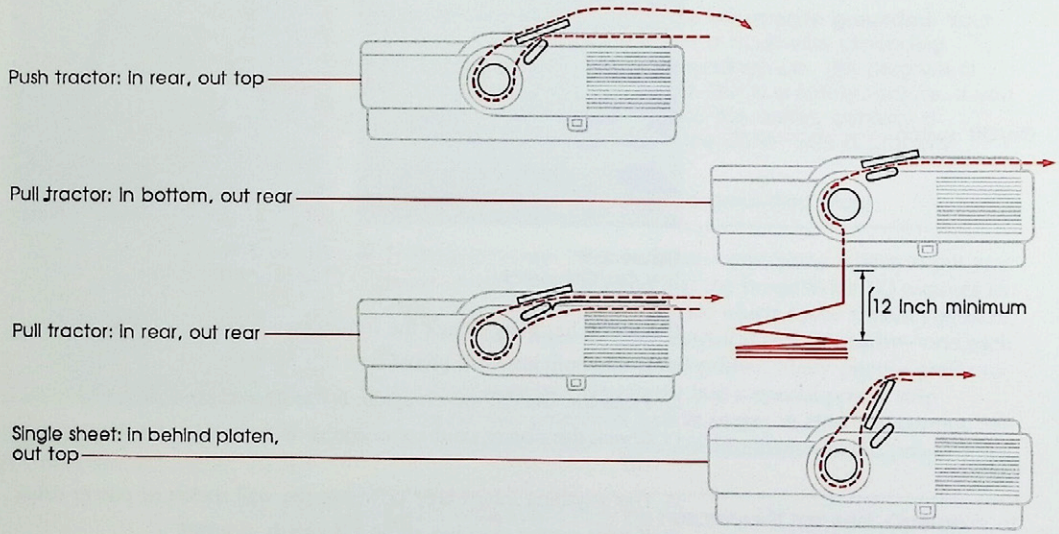

Push tractor: in rear, out top
Pull tractor: in bottom, out rear
Pull tractor: in rear, out rear
Single sheet: in behind platen, out top
1/2 inch minimum

Figure 2-11
ImageWriter LQ paper-feed paths

Warning Be sure to have paper feeding out the top exit towards the rear of the printer. If paper exits towards the front of the printer, the paper may jam.

Table 2-1
ImageWriter LQ paper-feeding options

Method	Paper you use	Feed in	Feed out	Section to see
Push tractor	Pin-feed regular	Rear	Top slot	"Pin-Feed Paper With Push Tractor"
Pull tractor	Pin-feed regular	Bottom*	Rear	"Pin-Feed Paper With Pull Tractor"
Pull tractor	Pin-feed regular	Rear*	Rear	"Pin-Feed Paper With Pull Tractor"
Pull tractor	Pin-feed forms, labels	Bottom	Rear	"Pin-Feed Paper With Pull Tractor"
Single sheet	Single sheet	Behind platen	Top slot	"Single Sheets of Paper"

* Feed regular pin-feed paper onto the pull tractor from the bottom when you have a slotted table, or from the rear when no slotted table is available.

❖ *More information:* Chapter 7 has more complete information on choosing from paper-feeding options and working with various kinds of paper in your ImageWriter LQ.

Pin-feed paper with push tractor

When you load pin-feed paper for the first time, you adjust tractor position and width to accommodate your paper, set the printer to pin feed with the **paper-feed lever,** and feed the paper in automatically.

❖ *Note:* The push tractor position is set when the printer is shipped.

The push tractor "pushes" pin-feed paper under the platen when the paper is fed into the rear of the printer. Use the push tractor with rear feed in either of these two situations:

- ☐ You want to tear off the printed sheet without advancing the paper forward a full page. (This saves paper, as you don't have to advance a blank sheet prior to tearing off the last page of the print job.)

  ❖ *Note:* You must change **DIP** (dual inline package) **switch** SW2-8 so the printer will automatically load paper with the perforation above the paper bail.

- ☐ You're not using a printer table with a paper-feed slot for bottom paper feeding.

Changing DIP switch SW2-8

The ImageWriter LQ normally loads paper to the top-of-form mark on the **paper guide.** To take advantage of **last form tear-off,** you change a DIP switch setting on the printer so that the printer will load the pin-feed paper perforation 1⅛ inch above the print line on the paper bail, letting you tear off the last printed page.

To change DIP switch SW2-8, follow these steps:

1. Make sure the printer is off.
2. Open the DIP switch cover at the left rear of the printer, under the rear cover. See Figure 2-12.

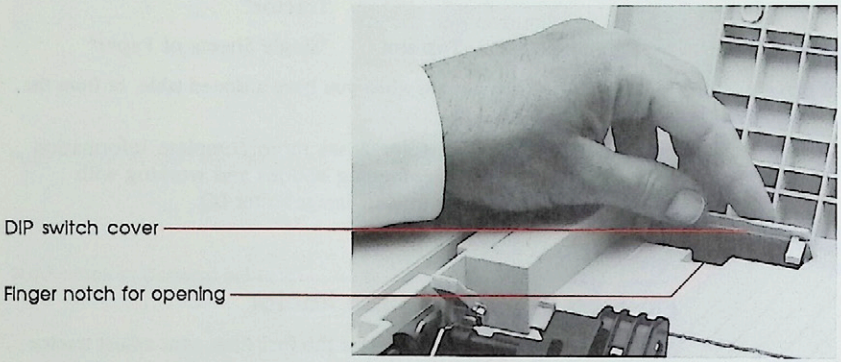


Figure 2-12
DIP switch cover

3. Locate the middle block (SW2) of switches. The DIP switch label on the inside cover identifies default switch settings. Open DIP switches point towards the back of the printer; closed DIP switches point towards the front.
4. With a small screwdriver or pen, flip switch 8 on block SW2 to the down, or closed position, towards the front of the printer.

   Closing SW2-8 sets the auto paper load to 1⅛ inch above the print line. If you are not using the push tractor, leave SW2-8 open.
5. Replace the DIP switch cover and go on to the next section to load your paper.

Loading pin-feed paper using the push tractor

To load your pin-feed paper using the push tractor, follow these steps:

1. Position the printer so there's enough room behind it for the paper to feed in and out.
2. Place your stack or box of pin-feed paper behind the printer. Make sure that there are no obstacles (cords, for example) between the paper and the printer. The proper stack must be no higher than the printer.
3. Tip the front cover open. Then open the rear cover to get to the tractor. See Figure 2-13.
4. Make sure the tractors are in the push position and locked. See Figure 2-13.

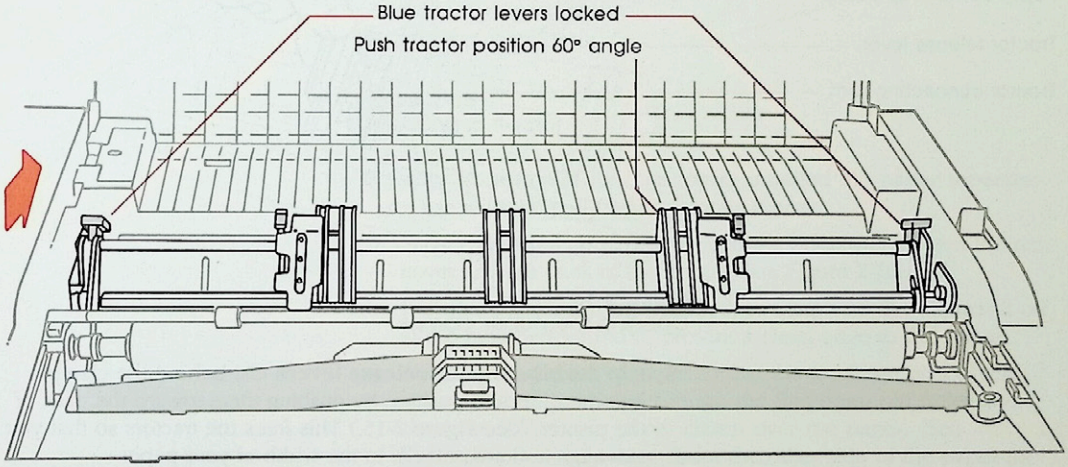


Figure 2-13
Using the push tractor

If the tractors are not in the push position, push the blue tractor levers (the larger ones) back to release the tractors. With your thumbs on the middle of the tractor bar, lift up slightly, then push down and towards the rear of the printer until the tractor bar locks. Push the tractor levers forward and down to lock them.

Important Always be sure the tractors are locked in position before you print.

5. Flip open both **paper clamps** on the tractor by lifting them. (See Figure 2-14.) The clamps should spring into an upright position.

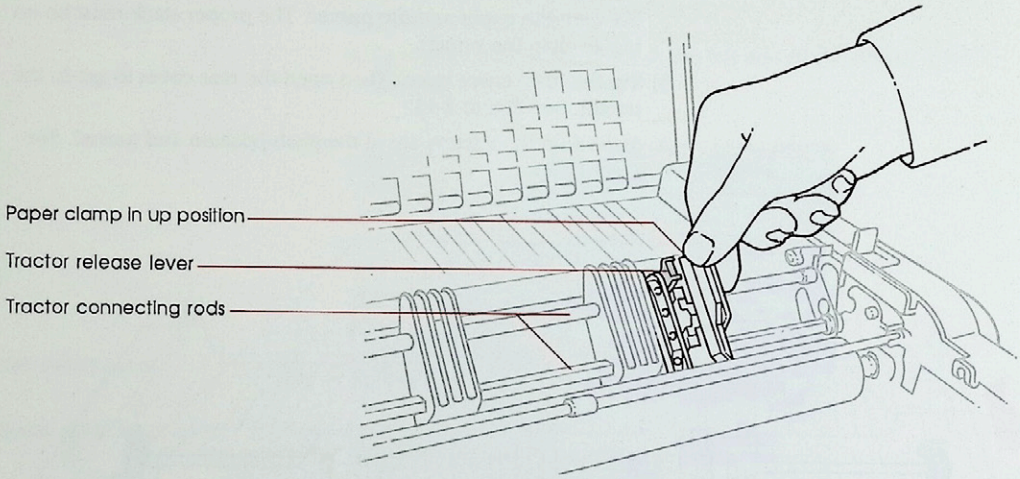


Figure 2-14
Opening the paper clamps

6. Flip the blue **tractor release levers** just behind the clamps into the unlocked position by pushing them toward the back of the printer. (See Figure 2-15.) This frees the tractors so that you can align and adjust them to the width of your paper.

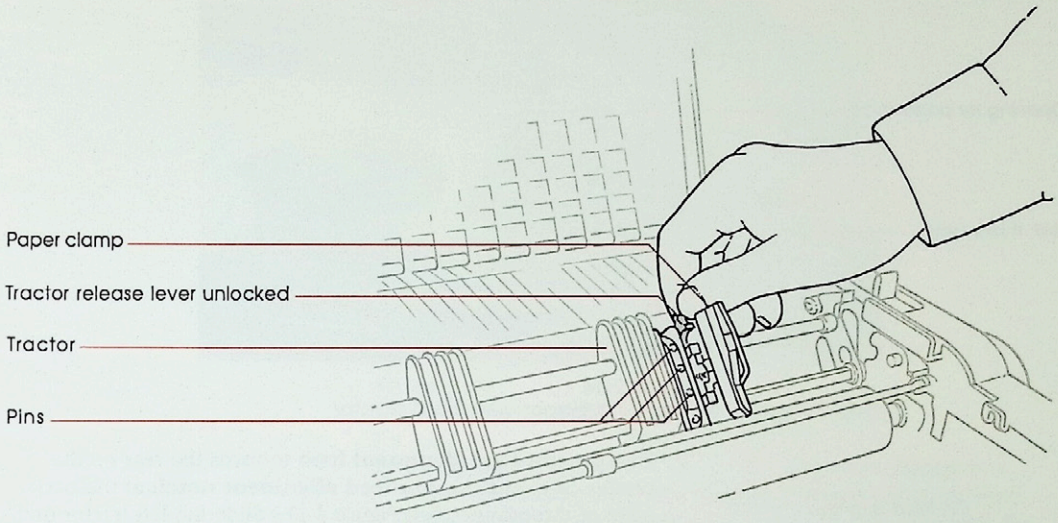


Figure 2-15
Releasing a tractor

❖ *Paper separator?* If you previously installed the paper separator for use with the pull tractor, remove it now.

7. Slide your pin-feed paper through the opening between the rear cover and the back of the printer. See Figure 2-16.

   If the lead sheet is torn, wrinkled, or otherwise flawed, tear it off at the next perforation to present a clean edge to the printer.

8. Place the lead sheet of paper so that the top three pins of the left-margin tractor poke through the first three pin holes and close the left-margin paper clamp over the paper. (See Figure 2-16.) Don't worry about the other side of the paper for the moment.

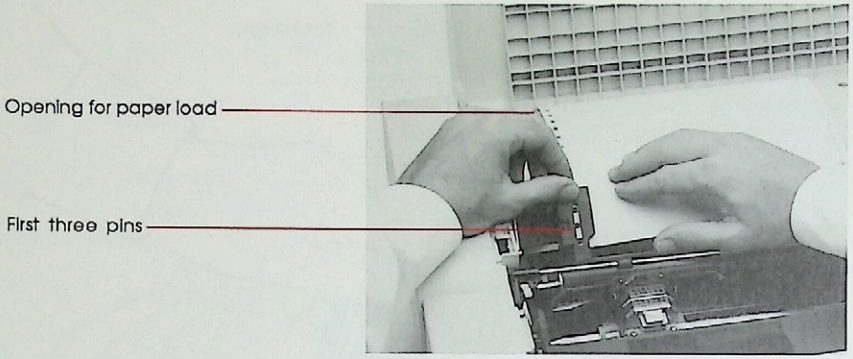


Figure 2-16
Clamping paper with push tractor

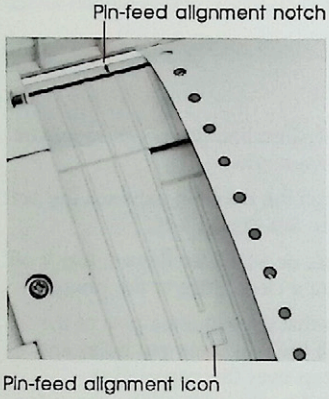


Figure 2-17
The pin-feed alignment icon

9. Find the **pin-feed alignment icon** towards the rear on the printer case, and the **pin-feed alignment notch** at the back edge of the printer. (See Figure 2-17.) Slide the left tractor until the paper edge aligns with the icon groove and the notch.

   When pin-feed paper is aligned with the icon groove and the notch, it is also aligned with the vertical red mark on the paper bail. Left-margin printing begins 1/4 inch from the perforation, in line with the black mark on the paper bail.

   See "Adjusting Tractors for Correct Left-Margin Printing" in Chapter 7 if you need to change the point where the printer begins printing.

10. With the tractor and paper properly aligned, lock the left-margin tractor in place by pressing its lever forward. (If the tractor moves sideways, you haven't used the correct lever to lock it.)

11. Slide the right-margin tractor so that its top three pins come up through the paper's first three holes, and close the right paper clamp. Gently slide the tractor as far as necessary to take the slack out of the paper.

12. Press the right-margin tractor release lever forward to lock the tractor in place. Figure 2-18 shows pin-feed paper correctly inserted on the push tractor.

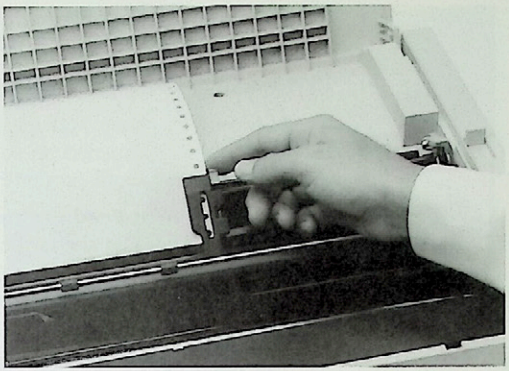


Figure 2-18
Pin-feed paper correctly inserted on push tractor

❖ *By the way:* Adjust tractor width only when you change to a paper with a different width. Starting a fresh stack of pin-feed paper involves only opening the paper clamps, dropping the paper onto the pins, and closing the clamps. Always make sure there are no obstacles in the paper's path.

13. Pull the **paper-feed lever,** located behind the platen knob, forward for pin feed. See Figure 2-19.

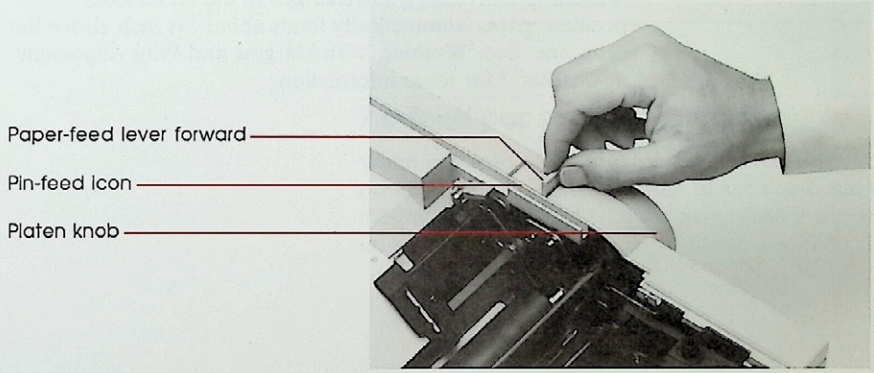


Figure 2-19
Paper-feed lever set for pin feed

14. Make sure the **paper thickness lever** is pushed all the way back to position 1 for pin-feed paper thickness. See Figure 2-20.

15. Close the rear cover, and then close the front cover.

    ❖ *Front cover note:* Make sure the front cover is in place and the printer is turned on so that automatic pin-feed paper loading will work properly.

16. Press the **Form Feed button** to automatically load and position paper just above the paper bail. See Figure 2-20.

    If nothing happens, make sure the Power light is green (indicating that the printer is on), the Select light is off, and the front cover is closed.

    The Form Feed button rolls the paper under the platen and the plastic paper guide. When the paper perforation reaches a predetermined point, the form feed automatically stops. Printing begins at the bottom line on the guide.

    The paper bail automatically lifts during a form feed paper load (on the first sheet only); when the paper moves four to five lines past the bail during printing, the bail is automatically lowered so it holds the paper in place.

    ❖ *Form feed positioning:* When DIP switch SW2-8 is off (the default position), paper automatically feeds to the top-of-form line on the paper guide, ⅙ inch above the print line. When DIP switch SW2-8 is changed to the on (closed) position, paper automatically feeds about 1⅙ inch above the print line. See "Working With Margins and Print Alignment" in Chapter 7 for more information.

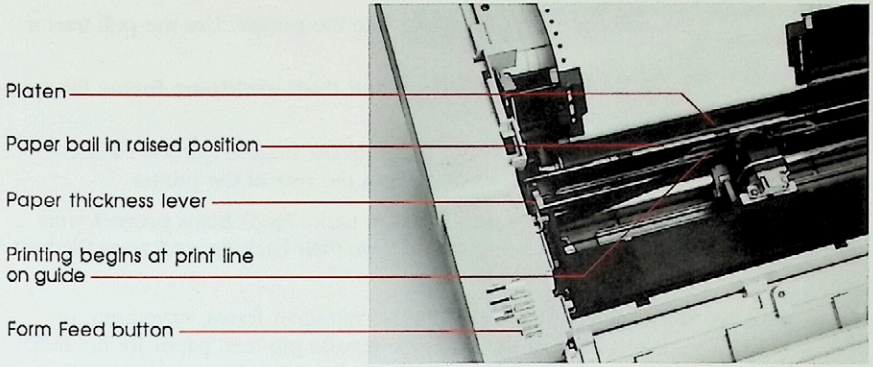


Figure 2-20
Pin-feed paper loaded with form feed

When the paper is satisfactorily loaded, jump ahead to the section "Running the Printer Self-Test" toward the end of this chapter.

Important Moving the paper ball manually will interrupt a form feed and proper paper placement. The ImageWriter LQ is built to manipulate the ball automatically for you. When you're using the push tractor setting you can tear perforated paper when the perforation is under the paper guide. See Chapter 7 for more information about paper placement and top margins.

Pin-feed paper with pull tractor

When you load pin-feed paper for the first time, you adjust tractor position and paper clamp width to accommodate your paper, set the printer to pin feed with the paper-feed lever, and feed the paper in.

The pull tractor "pulls" paper into the printer. Use the pull tractor for

- pin-feed labels, envelopes, and thick **multipart forms** fed from the bottom
- regular pin-feed paper fed from the bottom (through a slotted printer table or stand) or from the rear of the printer

The straight paper path (bottom paper-feed) helps prevent jams and labels from being pulled from their backing, and gives the best print alignment on the page.

❖ *Note:* Even if you plan to use multipart forms, envelopes, or labels most of the time, use regular pin-feed paper for the initial paper load and printer test.

To load your pin-feed paper using the pull tractor, follow these steps:

1. Position the printer so there's enough room for the paper to feed in and out.

   Use the indicators on the sides of the printer to align it over a paper slot in a table for bottom feeding. See Figure 2-21.

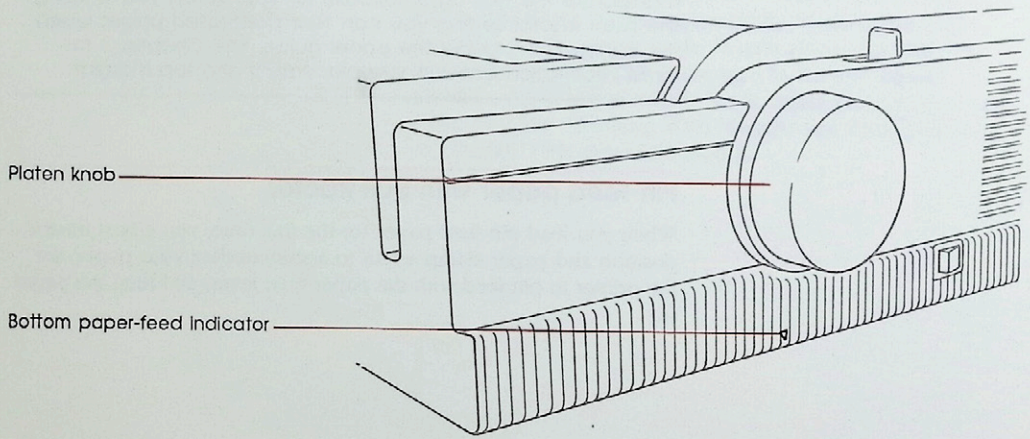


Figure 2-21
Bottom paper-feed indicator

2. Position your box of pin-feed paper: under the table if you are using a slotted printer table, to the rear of the printer if not.

   Make sure that there are no obstacles (cords, for example) in the way of the paper path and the printer.

3. Tip the front cover open. Then open the rear cover to get to the tractor.

4. Insert the two (outward-pointing) ends of the paper separator into the clips under the rear cover at the back of the printer and snap the separator into place. See Figure 2-22.

   The paper separator keeps rear-fed paper separated from paper exiting at the rear. (The paper separator is only necessary if you use rear feed.)

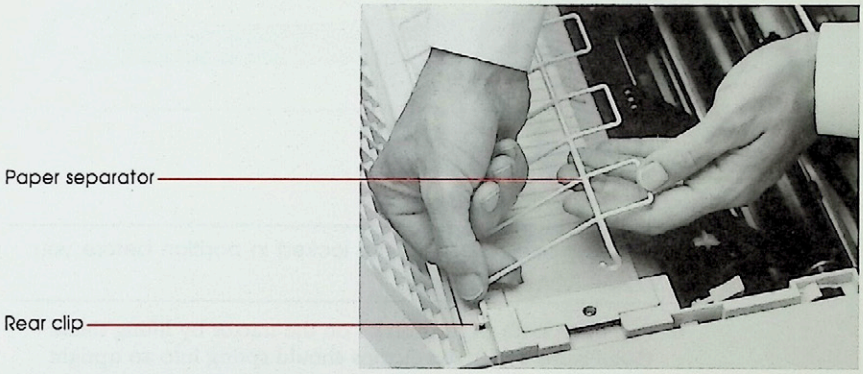


Figure 2-22
Inserting the paper separator

5. To move the tractor to the pull position, push the blue tractor levers (the larger ones) back. (See Figure 2-23.) Grasping the lower tractor bar in the middle, pull it up slightly and toward the front of the printer until it locks. Push the blue tractor levers forward to lock them.

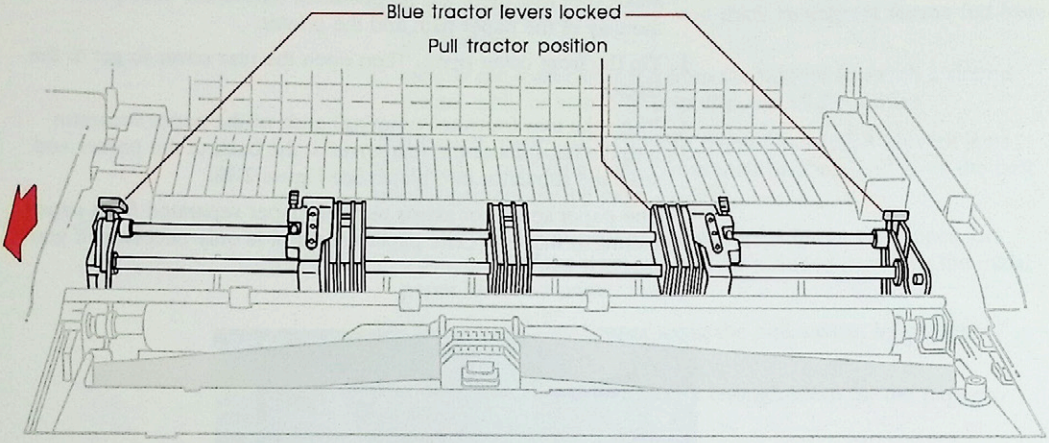


Figure 2-23
Using the pull tractor

Important Always be sure the tractors are locked in position before you print.

6. Flip open both paper clamps on the tractor by lifting them. (See Figure 2-24.) The clamps should spring into an upright position.

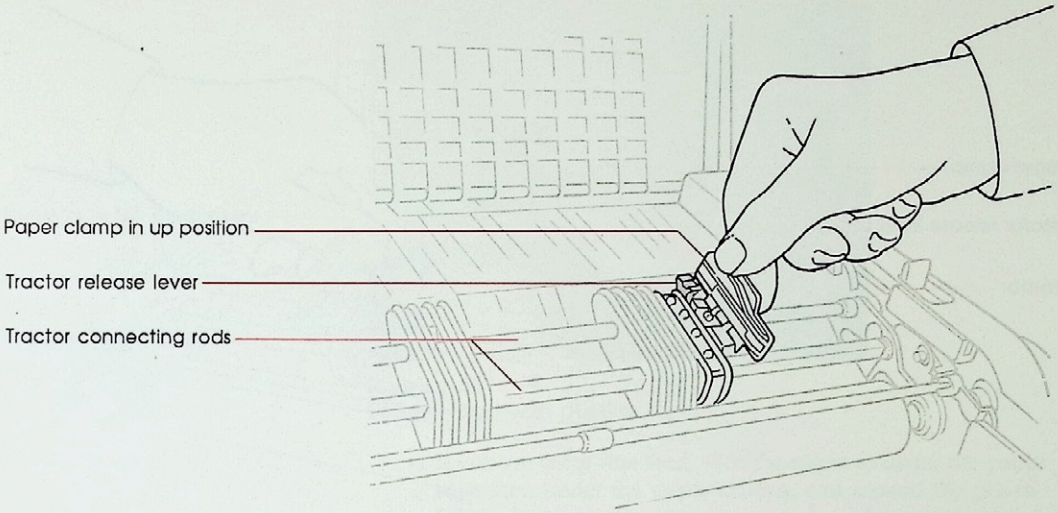


Figure 2-24
Opening the paper clamps

7. Flip the tractor release levers just behind the clamps into the up position by pushing them toward the back of the printer. (See Figure 2-25.) This frees the tractors so you can align and adjust them to the width of your paper.

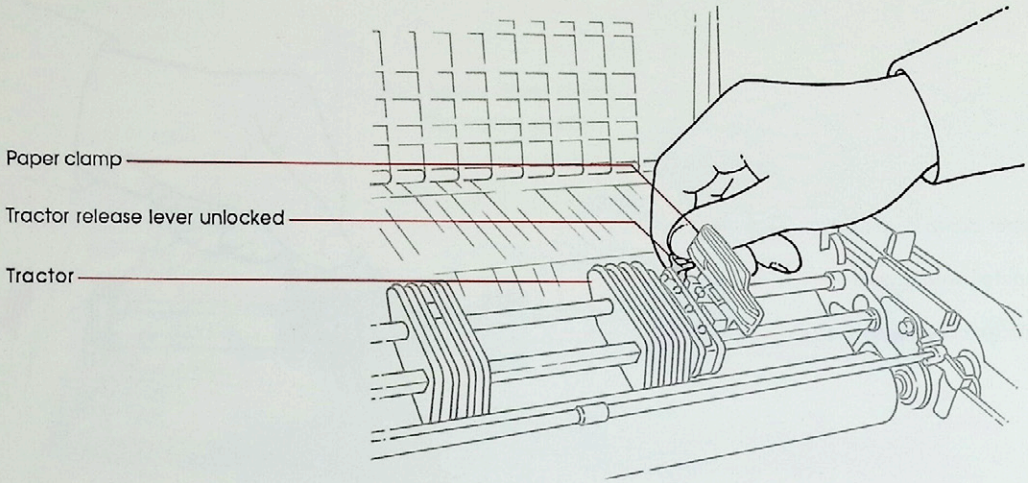


Figure 2-25
Releasing a tractor

8. Slide the paper in:

   - If you are using the **bottom paper-feed slot,** slide the paper into the paper-feed slot and up in front of the platen. Lift the bail, pull the paper up, and place the paper's pin holes over the left tractor pins. See Figure 2-26.

     If you have difficulty sliding the paper past the platen, pull the paper thickness lever forward to position 5. (See Figure 2-26.) Be sure to adjust the paper thickness lever back to position 1 when you've slid the paper up to the tractor pins.

     If the paper doesn't go smoothly back towards the tractors, the tractors may be in the wrong position, or the printer may not be aligned over the slot in the table.

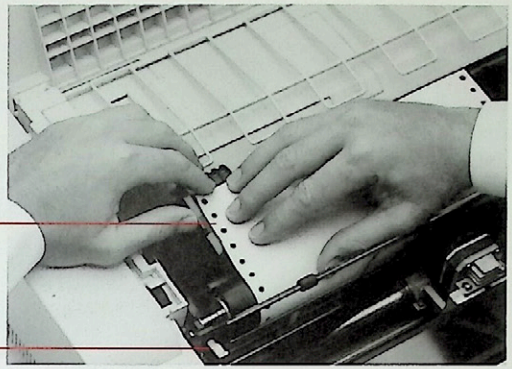


Figure 2-26
Bottom feed with pull tractor

- ☐ If you are using rear feed, slide the paper in under the paper separator, under the paper clamps, and around the platen. Lift the bail, pull the paper up, and place the paper's pin holes over the left tractor pins. See Figure 2-27.

  If you have difficulty sliding the paper under the platen, pull the paper thickness lever forward to position 5. (See Figure 2-26.) Be sure to adjust the paper thickness lever back to position 1 when you've slid the paper around to the tractor pins.

  ❖ *Note:* You must use the paper separator if you are feeding paper from the rear.

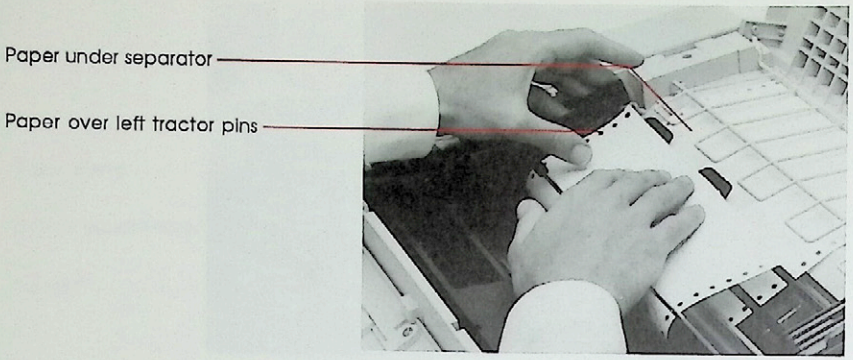


Figure 2-27
Rear feed with pull tractor

9. Slide the left tractor clamp until the paper edge aligns with the pin-feed alignment notch at the rear of the printer case. See Figure 2-28.

   When pin-feed paper is aligned with the notch, it is also aligned with the vertical red mark on the paper bail. Left-margin printing begins 1/4 inch from the perforation, in line with the vertical black mark on the paper bail.

   See "Adjusting Tractors for Correct Left-Margin Printing" in Chapter 7 if you need to change the point where the printer begins printing.

10. Close the left tractor clamp over the paper. (See Figure 2-29.) Don't worry about the other side of the paper for the moment.

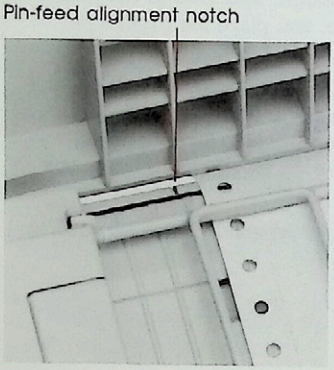


Figure 2-28
The pin-feed alignment notch

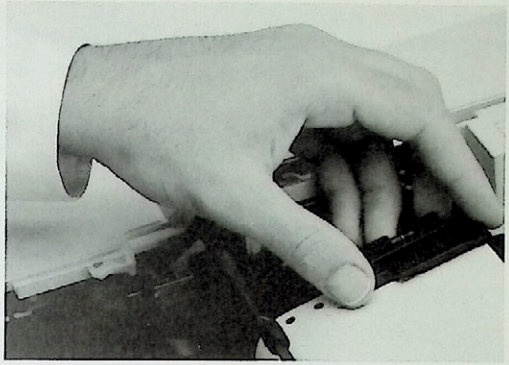


Figure 2-29
Clamping paper with pull tractor

11. With the clamp and paper properly aligned, lock the left-margin tractor in place by pressing its lever forward. (If the left-margin tractor moves sideways you haven't used the correct lever to lock it.)
12. Slide the right-margin tractor so that its top three pins come through the paper's first three holes, and close the right paper clamp. Gently slide the right-margin tractor as far as necessary to take the slack out of the paper.
13. Press the right-margin tractor release lever forward to lock the tractor in place. Figure 2-30 shows paper correctly inserted on the pull tractor.

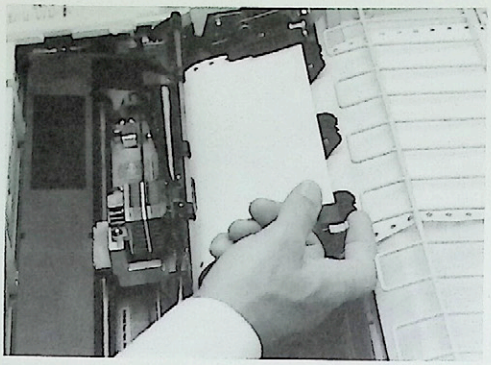


Figure 2-30
Pin-feed paper correctly inserted on pull tractor

❖ *By the way:* Adjust the tractor width only when you change to a paper with a different width. Starting a fresh stack of pin-feed paper involves only opening the paper clamps, placing the paper on the pins, and closing the clamps. Always make sure there are no obstacles in the paper's path.

14. Pull the paper-feed lever, located behind the platen knob, forward for pin feed. See Figure 2-31.

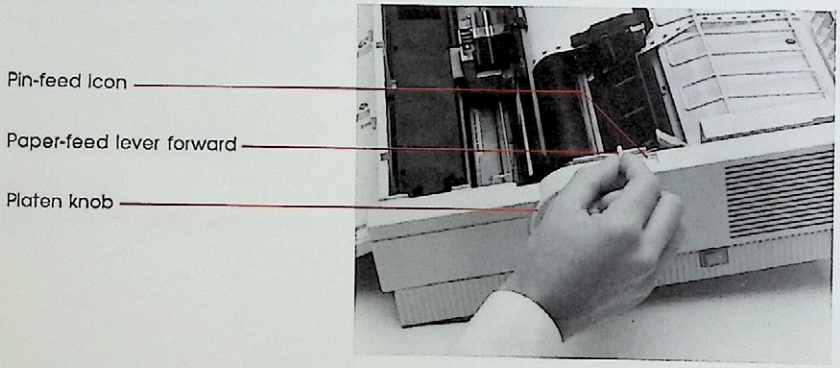


Figure 2-31
Paper-feed lever set for pin feed

15. Turn the platen knob clockwise to load the top perforation on the paper to the top-of-form line on the paper guide, ⅙ inch above the print line. See Figure 2-32.

    Printing begins at the bottom line on the paper guide.

    When you load paper manually, the printer remembers the paper position (top of form) you set until it is turned off. See "Working With Margins and Print Alignment" in Chapter 7 for more information.

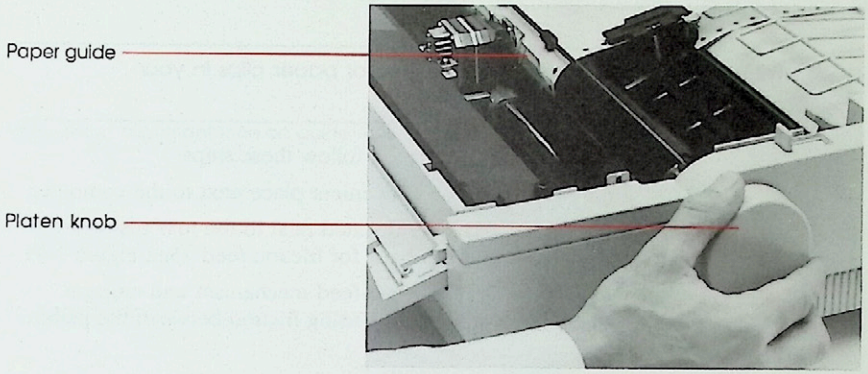


Figure 2-32
Paper loaded manually

16. Close the rear cover and then close the front cover.

Here are some helpful hints:

- The paper should exit through the rear of the printer, between the paper separator and the rear cover. If the paper jams, make sure it's not caught under the cover and that you've installed the paper separator.
- Be sure to adjust the paper thickness lever when using thick forms or labels. See "Adjusting the Paper Thickness Lever" in Chapter 7 for more information.

Single sheets of paper

Loading a single sheet of paper has four parts: you set the paper lever for **friction feed,** insert the piece of paper, align its left edge, and press a button. The printer automatically positions the paper.

❖ *A note on paper weight:* The ImageWriter LQ works best with 16- to 24-pound bond. Although we don't recommend it, if you must work with lighter papers (like onionskin), try inserting a backup sheet to provide enough thickness for the friction-feed mechanism.

Warning Do not use paper with staples or paper clips in your ImageWriter LQ.

To load your test sheet of paper, follow these steps:

1. Position the printer in a convenient place next to the computer.
2. Push the paper-feed lever (located next to the rear cover just behind the platen knob) back for friction feed. (See Figure 2-33.)

   Friction feed turns off the pin-feed mechanism and engages rollers that drive single sheets using friction between the platen and the paper.

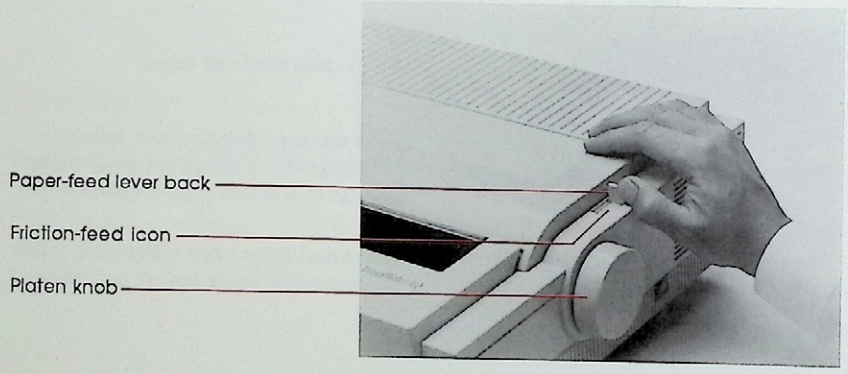


Figure 2-33
Paper-feed lever set for friction feed

3. Tilt the **single-sheet guide** in the rear panel up, slide it forward, and drop it slightly so it rests in an upright position. The tractor must be in the push position. See Figure 2-34.

   ❖ *Push tractor note:* If the tractors are not in the push position, open the covers and push the blue tractor levers (the larger ones) back to release the tractors. With your thumbs on the middle of the tractor bar, lift up slightly, then push down and towards the rear of the printer until the tractor bar locks. Push the tractor levers forward and down to lock them, and close the covers. Then tilt the single-sheet guide up.

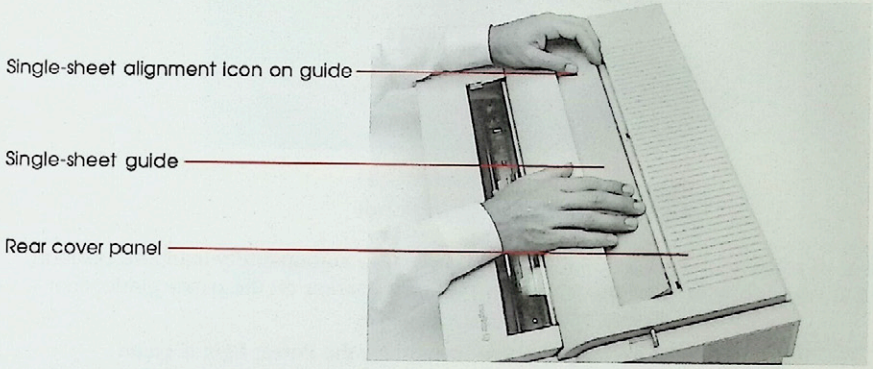


Figure 2-34
Tilting the single-sheet guide up

4. Align the left edge of the paper with the notch next to the single-sheet alignment icon on the single-sheet guide. Then slip the sheet of paper into the slot in front of the single-sheet guide until the paper reaches the platen. See Figure 2-35.

The paper goes about a third of the way in. Make sure that the paper is straight (just as you do when putting paper in a typewriter) and in deep enough for the platen to grip the paper.

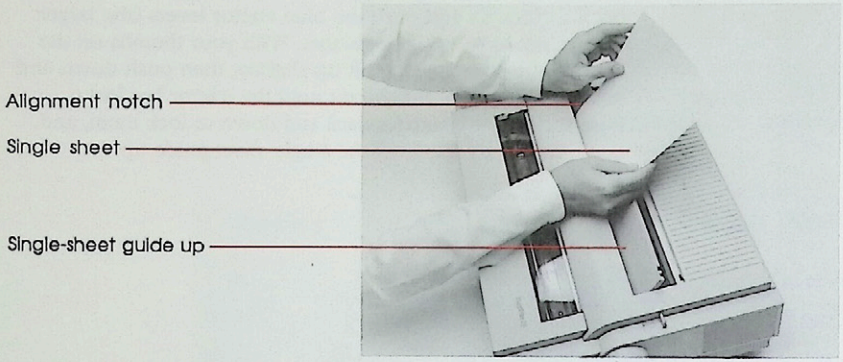


Figure 2-35
Aligning a single sheet of paper

5. Press the Form Feed button to automatically load and position the paper at the top-of-form marker on the paper guide. See Figure 2-36.

   If nothing happens, make sure the Power light is green (indicating that the power switch is on), the Select light is off, and the front cover is closed.

   The Form Feed button rolls the paper under the platen and the plastic paper guide. When the paper reaches the top-of-form marker on the paper guide, the form feed automatically stops. Printing begins at the bottom (print) line on the paper guide.

   The paper bail automatically lifts during a form feed. When the paper moves four to five lines past the bail during printing, the bail is automatically lowered so it holds the paper in place.

   ❖ *Note:* When single sheet paper is aligned properly, its left edge corresponds to the vertical red mark on the paper bail. Printing begins ¼ inch in, in line with the vertical black mark on the bail.

If the paper goes in crooked, move the paper lever to pin feed to release the paper; align the sheet; then set the paper lever back to friction feed.

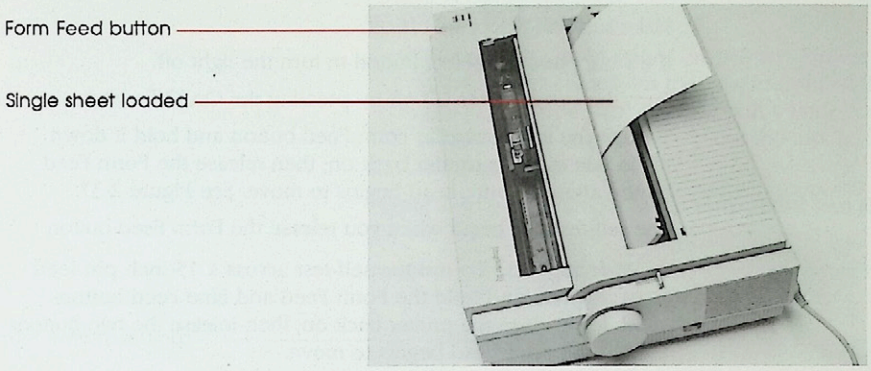


Figure 2-36
A single sheet loaded with form feed

Important Moving the paper ball manually will interrupt a form feed and proper paper placement. The ImageWriter LQ is built to manipulate the ball automatically for you.

Running the printer self-test

The printer self-test lets you make sure the printer works, and lets you check print quality before the ImageWriter LQ is connected to your computer. The self-test is simply a repeated printing of the internal ImageWriter LQ character set. When your printer passes the test, you will know that any problems that might arise are in the software, the computer, or in the connection between the computer and printer, rather than in the printer itself.

As soon as you have loaded either pin-feed paper or a single sheet of paper into your printer for the first time you are ready to run the self-test.

Here's how to run the test:

1. Make sure the Select light is off.

   If it's on, press the Select button to turn the light off.

2. Turn the ImageWriter LQ off by pressing the On/Off switch.

3. To start the test, press the Form Feed button and hold it down while you turn the printer back on; then release the Form Feed button after the print head begins to move. See Figure 2-37.

   The self-test will begin when you release the Form Feed button.

   - ❖ *Wide page test:* To run the self-test across a 15-inch pin-feed page, press and hold the Form Feed and Line Feed buttons while you turn the printer back on; then release the two buttons after the print head begins to move.
   - ❖ *Print quality test:* You can vary the built-in fonts during the self-test. See "Selecting Print Quality With the Button" in Chapter 6 for details.

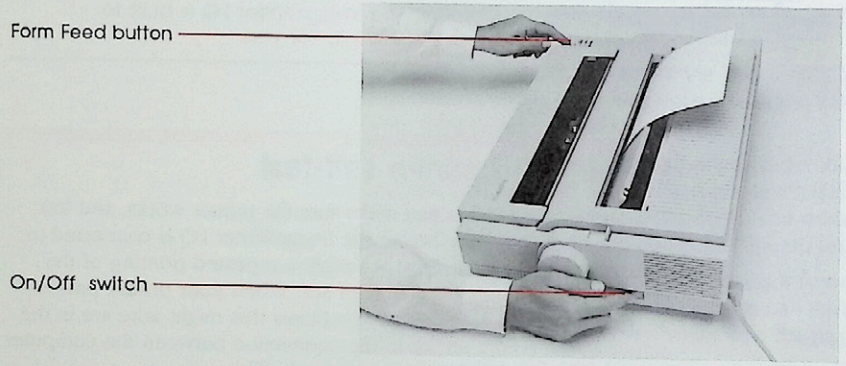


Figure 2-37
Starting the printer self-test

4. To stop the self-test, press the On/Off switch to turn the printer off.

5. To remove the test page, turn the printer on and press the Form Feed button. If you're using pin-feed paper, tear off the page so you can look at it.

   ❖ *How paper comes out of the printer:* Pin-feed paper on the push tractor comes out the top, in front of the single-sheet guide. Pin-feed paper on the pull tractor comes out the rear. Single sheets of paper come out the top, in front of the single-sheet guide.

Figure 2-38 is an example of the **output** that you should see.

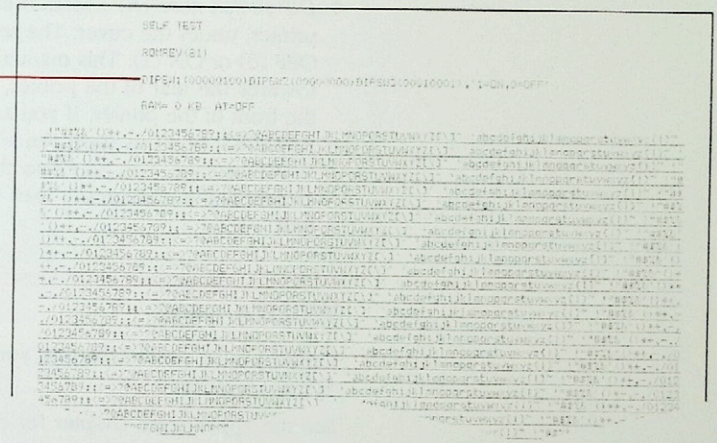


Figure 2-38
Self-test example

Examine the printed character set in the test sample carefully:

- ☐ Are all the characters complete?
- ☐ Is the spacing between the lines even?
- ☐ Is the page evenly dark from beginning to end?

If the print is not sufficiently dark, check the paper thickness lever on the left side of the printer. (See Figure 1-2.) Push it back (up) towards the rear of the printer to move the platen closer to the print head for darker print.

If you see any large areas of dark or light type on the page, or if the output is smudged, your printer is probably not adjusted correctly. See your authorized Apple dealer.

- *Color testing:* If you have installed a color ribbon, the self-test will print in seven colors. You should see print lines in each separate color. If the top or bottom edge of a printed line contains the next color, your printer isn't adjusted correctly. See your authorized Apple dealer.
- *DIP switch note:* DIP switches are located at the left rear of the printer, under the cover. The self-test lists DIP switch settings as OFF (0) or ON (1). This manual refers to Open (0), pointing towards the rear of the printer, and Closed (1), pointing towards the front of the printer. If you are an Apple II user, or if you install AppleTalk or a Cut Sheet Feeder, you will change some DIP switch settings. You may also change a DIP switch setting so the printer will automatically load the paper perforation above the bail.

What's next

If your printer passed the test, you're ready to connect it to your Apple computer.

See the appropriate chapter for connecting instructions.

- Multiple computers through an AppleTalk network: See Chapter 5 for AppleTalk connecting instructions and, for Macintosh computers, Chapter 3 for information about working with fonts.
- A single Macintosh computer (Macintosh II, Macintosh SE, or Macintosh Plus): See Chapter 3.
- A single Apple II computer (Apple IIGS, Apple IIc, or Apple IIe): See Chapter 4.

Chapter 3

Connecting the ImageWriter LQ to Your Macintosh Computer

This chapter shows you how to

- install the ImageWriter LQ **printer resource** on your startup disks
- connect the ImageWriter LQ to a single Macintosh II, Macintosh SE, or Macintosh Plus computer
- test the connection between the printer and your computer
- load Macintosh fonts from *ImageWriter LQ Disk 1*, *LQ Fonts Disk 2*, and *LQ Fonts Disk 3* on your startup disk, and use those fonts with the ImageWriter LQ
- print documents with your Macintosh and ImageWriter LQ

This chapter assumes that you have set up and tested your ImageWriter LQ. If you have not done so, see Chapter 2.

❖ *AppleTalk users:* If you are connecting the printer to more than one Macintosh through AppleTalk, use the connecting instructions in Chapter 5. Then read the last two sections in this chapter, "Working With Macintosh Fonts for the ImageWriter LQ" and "Printing Documents."

Important Macintosh fonts for the ImageWriter LQ require an 800K or larger startup disk because of their size. If you use multiple fonts, it's a great advantage to have a hard disk.

Installing the printer resource

The printer resource (sometimes called a printer **driver**) that lets you use the ImageWriter LQ with your Macintosh is on the *ImageWriter LQ Disk 1*. You install the printer resource in the System Folder on your **startup disk.**

A **startup disk** contains the System file, a Finder, and other information your Macintosh needs to start up the system. A startup disk can be either a hard disk or a 3.5-inch disk.

Warning Never keep more than one System file and one System Folder on a startup disk. Doing so may confuse you, and will certainly cause problems for your Macintosh.

Here's how to install the printer resource:

1. Turn the Macintosh off and then on again.

   This ensures that new printer resources can be installed without problems.

2. Insert the *ImageWriter LQ Disk 1* in the internal drive and open the icon representing the disk by selecting the icon and choosing Open from the File menu, or by double-clicking the icon.

3. Open your startup disk.

4. Drag the LQ ImageWriter icon (it represents the printer resource) to the System Folder on your startup disk.

You must use current versions of the System file (version 4.1 or later), Finder (version 5.5 or later), and Chooser (version 3.1 or later) with ImageWriter LQ printer resources. If you're not sure which version numbers you're using, use the Get Info command to find out. If you need a software update, see your authorized Apple dealer.

That's it! Now you can connect the printer to your Macintosh.

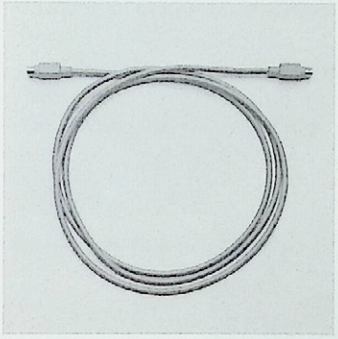


Figure 3-1
Serial interface cable for Macintosh computers and the ImageWriter LQ

Making Macintosh connections

You need an Apple **serial interface cable** to connect the printer to your computer. The Macintosh II, Macintosh SE, and Macintosh Plus use the Apple System/Peripheral-8 Cable. See Figure 3-1.

Warning If your serial interface cable does not have the proper connectors, don't try to force it; see your authorized Apple dealer before continuing.

Always make sure you have turned off both the computer and a peripheral device, such as a printer, before connecting or disconnecting them. Changing cables when the power is on can damage your equipment.

Important Your Apple computer and its peripheral devices were FCC-certified under test conditions that include use of shielded cables and connectors between system components. It is important that you use shielded cables and connectors to reduce the possibility of causing interference to radios, television sets, and other electronic devices.

Figure 3-2
The 8-pin, minicircular connector

Connecting the printer cable to the ImageWriter LQ

Follow these steps to connect the printer cable to the printer:

1. Make sure that your printer and computer are turned off.
2. Locate the **8-pin, minicircular connector** (shown in Figure 3-2) on your printer cable. You'll see an Apple icon on the top side of the connector.
3. Plug the connector into the printer's **serial interface socket.** (See Figure 3-3.) Make sure you get a firm fit. Loose connections can cause interference with radios and television sets, scramble data, or stop the printing process.

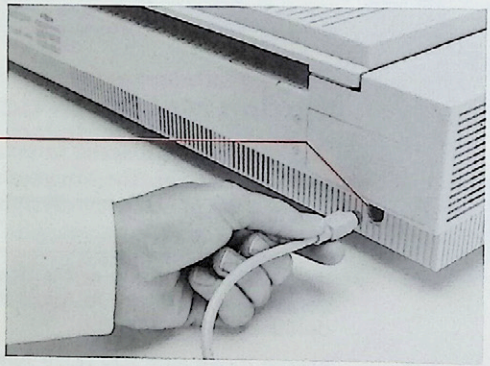


Figure 3-3
Plugging the printer cable into the printer

Connecting the printer to your Macintosh

To connect the ImageWriter LQ to your Macintosh, follow these steps:

1. Insert the free end of the printer cable into the **Printer port.** See Figure 3-4.

   If another connector (such as the one for AppleTalk) occupies the Printer port, connect the printer cable to the **Modem port.**

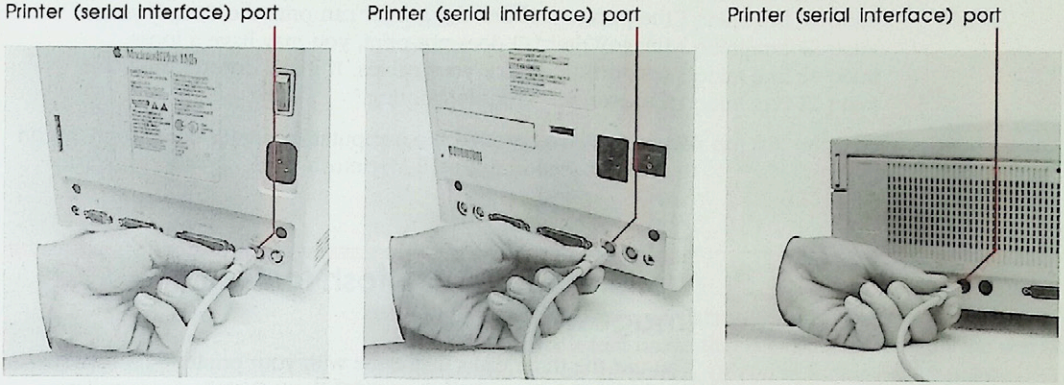

Printer (serial interface) port
Printer (serial interface) port
Printer (serial interface) port
Macintosh Plus back panel
Macintosh SE back panel
Macintosh II back panel

Figure 3-4
Connecting the printer cable to a Macintosh

2. Turn on the computer.

   If you are starting up from an 800K disk, make sure you have your startup disk in the drive.

3. Turn the printer on and make sure the Select light is on.
4. Open the **Chooser** from the Apple menu.
5. Select the LQ ImageWriter icon and the appropriate port icon.

   If you need help with these procedures, see the owner's guide that came with your computer for details.

6. Close the Chooser.

7. Open the startup disk icon, or be sure that at least one disk is open on the desktop.
8. Open Page Setup from the File menu to check the printer's name, paper settings, and other settings. Click OK when you have corrected or verified the page setup.
9. Choose Print Catalog from the File menu to test the ImageWriter LQ connection with your computer. Your ImageWriter LQ should start printing the directory of the current disk.

   The connection test verifies that the computer can send data to the printer and that the printer can print the data. If your ImageWriter LQ does not print, you may have a loose connection. Check your cables. If it still doesn't print, see Chapter 8, "Troubleshooting."

When you have verified the computer to printer connection, go on to the next section to install Macintosh fonts.

Working with Macintosh fonts for the ImageWriter LQ

You use the three disks that came with your printer—*ImageWriter LQ Disk 1*, *LQ Fonts Disk 2*, and *LQ Fonts Disk 3*—for installing Macintosh fonts.

Warning Be sure to replace the old version of the Font/DA Mover with the new one on the *ImageWriter LQ Disk 1*, and use the new version when you copy fonts to your System file.

Before you install fonts, there is one key concept to keep in mind: for every **font size** you want to use in final text output, you must have two font sizes in the System file on your startup disk.

- You must have one font in the final output size (1X). The Macintosh uses this font for the screen display.
- You must have an additional font three times the final output (printed) size (3X) to ensure the best possible printing on the ImageWriter LQ.

Table 3-1 lists the font sizes you need in your System file to automatically print the highest quality fonts from 9 through 24 points.

Table 3-1
Font sizes required for highest print quality

For printed font size	Font size needed in System file
9 point	9 point and 27 point
10 point	10 point and 30 point
12 point	12 point and 36 point
14 point	14 point and 42 point
18 point	18 point and 54 point
24 point	24 point and 72 point

If you don't install both sizes you can still print, but the results won't be as good.

About 3X fonts

When the Macintosh prepares data to send to the printer, it looks in your System file for a font image that is exactly three times the size of the image you see on the screen. (If you're looking at 10-point Times, the Macintosh will look in the System file for 30-point Times.) That font image is then printed at a density three times greater than the density on the screen, and is compressed back to the size you see on the screen (10-point Times).

The reason for this is simple. The Macintosh screen display has a resolution of 72 dots per inch (dpi). ImageWriter LQ output has a resolution of 216 dots per inch, or three times as great as the screen resolution.

3X multiples of Macintosh fonts are available only for 9, 10, 12, 14, 18, and 24 points. When you try to print sizes outside this range, the results depend on what other font sizes you have in your System file. Macintosh system software uses a method of font size translation called **font scaling** when the size requested is not available. A size close to that required may or may not produce acceptable quality.

Macintosh fonts: What's on the disks

The three disks that came with your printer—*ImageWriter LQ Disk 1*, *LQ Fonts Disk 2*, and *LQ Fonts Disk 3*—contain full sets of Times, Helvetica, Symbol, and Courier fonts.

Figure 3-5 illustrates the contents of the three disks and has a 12-point printed sample of each of the font families—Times, Helvetica, Courier, and Symbol—made from 36-point fonts in the System file.

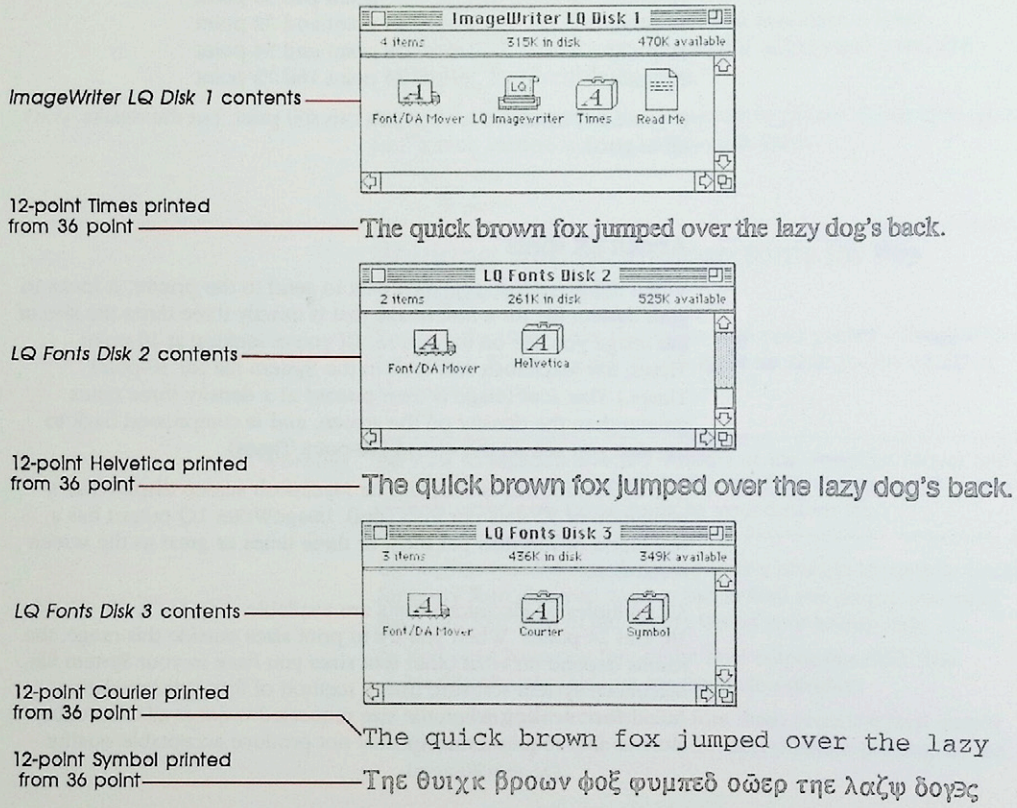


Figure 3-5
Contents of *Disk 1, Disk 2, and Disk 3*

Choosing fonts to add to your System file

The fonts you decide to add to your System file depend on two factors: the size of your startup disk, and which fonts and font sizes you normally use in your work.

Important The Read Me file on *ImageWriter LQ Disk 1* contains important up-to-date information about the Macintosh font families on the printer disks. Be sure to read this file, especially if you have limited disk space.

Hard disk users

If you start up your Macintosh from a hard disk, and have enough space on that disk, it is easiest to store all the font families in the System file on your hard disk. You need to do the following:

1. Copy the Font/DA Mover from *ImageWriter LQ Disk 1* to your startup disk, replacing any existing version of the Font/DA Mover.
2. Remove any old versions of Times, Helvetica, Symbol, and Courier fonts before you load the new fonts.
3. Select and copy the new fonts on *ImageWriter LQ Disk 1, LQ Fonts Disk 2*, and *LQ Fonts Disk 3* to the System file on your hard disk with the Font/DA Mover.

   To take best advantage of the fonts, copy entire font families together.

See the section "Installing Fonts: Using the Font/DA Mover" later in this chapter for step-by-step instructions.

- *Space constraints?* If you have space constraints, use the suggestions in the section that follows, "800K Disk Users," to determine which fonts to add to your System file.

800K disk users

If you start up your Macintosh from an 800K disk, you have a limited amount of disk space to work with for font installation. You need to do the following:

1. Evaluate the current fonts in your System file, deciding which fonts you don't normally use and can remove.
2. Evaluate the fonts on *ImageWriter LQ Disk 1, LQ Fonts Disk 2,* and *LQ Fonts Disk 3,* deciding which fonts you need to add to your System file. Remember, your System file must contain a 1X and 3X version of each font size you want to print for highest quality results.
3. Copy the Font/DA Mover from *ImageWriter LQ Disk 1* to the System file on your startup disk.
4. Open the new version of the Font/DA Mover from your startup disk. Use it to do the following:
   - ☐ Copy fonts that you don't normally use and desk accessories you don't need to another disk and remove them from your startup disk, creating as much room as possible on your startup disk.
   - ☐ Remove any old versions of Times, Helvetica, Symbol, and Courier fonts that you'll be duplicating when you load the new fonts.
   - ☐ Select and copy new fonts from *ImageWriter LQ Disk 1, LQ Fonts Disk 2,* and *LQ Fonts Disk 3* to the System file on your startup disk.

     When you choose from among a family of fonts, try to include all the fonts and font sizes you normally use, as well as a font three times the size of each font you want to print, in the System file.

     For maximum font storage space, be sure your startup disk contains no documents or applications.

See the section "Installing Fonts: Using the Font/DA Mover" later in this chapter for step-by-step font installation instructions. See the next section, "Making Space on Startup Disks," for information about removing documents, applications, or desk accessories to create additional space on your startup disk.

Making space on startup disks

To free more space on a startup disk, remove printer resources, documents, applications, desk accessories, or fonts that you don't need.

Important Be sure to make a copy (back up) of anything you may want to use at some future date before removing it from your startup disk.

---

1. Remove printer resources you don't need by dragging them to the Trash. Then choose Empty Trash from the Special menu.
2. Use the Font/DA Mover to remove desk accessories or fonts you don't need. See the next section, "Installing Fonts: Using the Font/DA Mover." If you are removing desk accessories, be sure to click the Desk Accessory button to see a list of the accessories on your startup disk.
3. Remove documents or applications from the startup disk. Select the icon or name for the document, folder, or application you want to move. Drag the icon to the disk you want to move to. Drag the icon left behind on your startup disk to the Trash, and choose Empty Trash from the Special menu.

When you have created enough space on your starup disk, go on to the next section, "Installing Fonts: Using the Font/DA Mover" to add fonts to your startup disk.

Installing fonts: Using the Font/DA Mover

The Font/DA Mover is an application that allows you to add or remove fonts or desk accessories from any System file. Use the instructions in this section to add Macintosh 1X and 3X fonts from *ImageWriter LQ Disk 1, LQ Fonts Disk 2,* and *LQ Fonts Disk 3.*

❖ *Reminder:* The fonts that you can work with in an application depend on which startup disk—that is, which System file—your Macintosh is currently using, and which fonts are stored on that startup disk.

Which fonts you add to your startup disks depends on your needs and on how much space you have on the startup disk:

- ☐ If you simply want to add a minimum font set and get to work, and you have enough disk space, add the whole font family from *ImageWriter LQ Disk 1.*
- ☐ If you want to add a complete set of fonts, and have enough disk space, add the font families from all three disks.
- ☐ If you have limited disk space, select the fonts you need from the font families on each of the disks, and add them. If you need to create more space in a System file, see the suggestions in the previous section, "Making Space on Startup Disks" before attempting to add fonts.

Here's how to use the Font/DA Mover to move fonts from the ImageWriter LQ disks to your System file:

1. Copy the Font/DA Mover from *ImageWriter LQ Disk 1* to your startup disk.

   The new version of the Font/DA Mover replaces your old one. Be sure to use the new version to copy fonts to the System file on your startup disk.

2. Open the Font/DA Mover.

   The list on the left includes all fonts in the System file on the current startup disk. (See Figure 3-6.) The list on the right is empty.

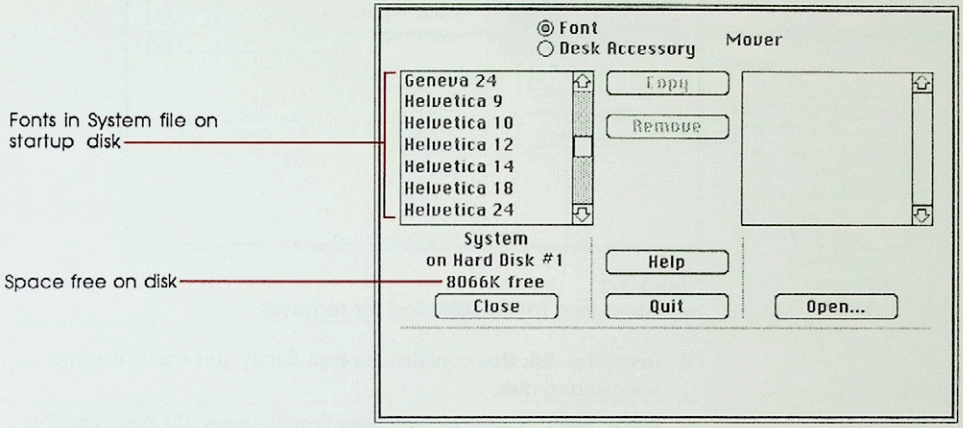


Figure 3-6
Font/DA Mover opened with System file fonts displayed

3. Select the old fonts you'll be replacing and click Remove. See Figure 3-7.

   Removing any old fonts you want to replace ensures that you won't receive any misleading out-of-room messages, and that the font files will be updated correctly. There's no need to save the old set you are replacing.

   ❖ *Need to make space for new fonts?* If you need to remove fonts from your System file to create space for new ones, you can create a storage file for them at this point. Click Open, then click New. Name the new (storage) file, insert a blank disk, and click Create. Copy the fonts to the new file, then remove them from your startup disk and go on to step 4.

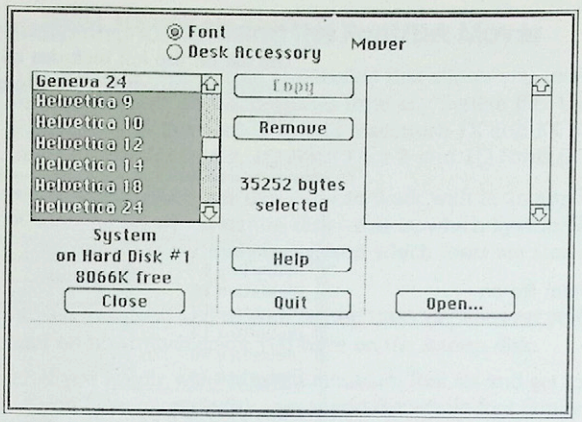


Figure 3-7
Helvetica font family selected for removal

4. Insert the disk that contains the font family you want to add to your startup disk.

   If you want to add the Helvetica family, insert *LQ Fonts Disk2* in the drive.

5. Click the Open button under the empty box on the right side of the screen.

   When you click the Open button, you'll see a directory of the font files on the disk you just inserted. See Figure 3-8.

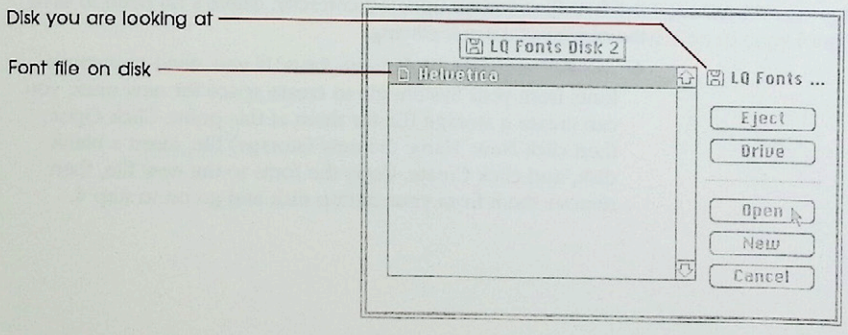


Figure 3-8
Dialog box for locating or creating font files

6. Open the font file that you want to copy from.

   Fonts in the opened file appear on the right side of the dialog box. The Font/DA Mover displays the name of the current file, the name of the disk that it's on, and the space available on the disk. See Figure 3-9.

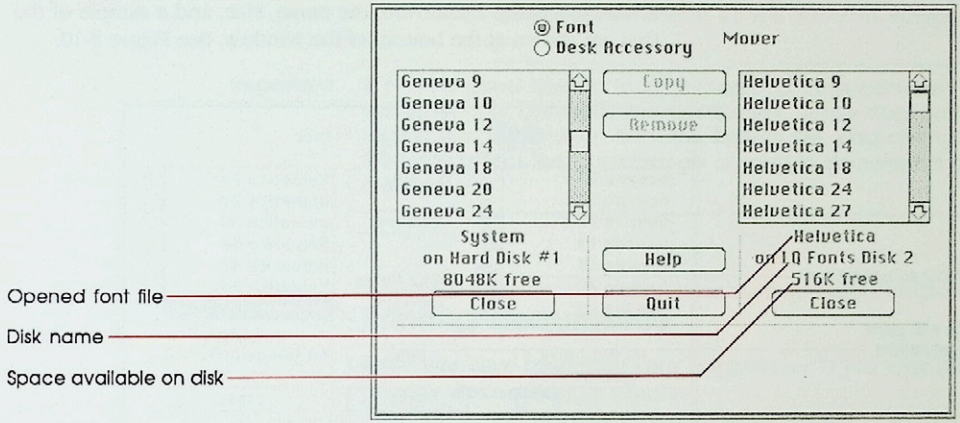


Figure 3-9
Fonts in an opened file

7. Select the fonts you want to copy:

   - To select a single font, click on it. Do this if your disk space is limited.

     The number of bytes selected is shown in the middle of the window, so you can determine whether you have enough space on your startup disk to add the selected font.

Important Don't forget to copy both the final output size (1X) and its 3X counterpart.

- To select more than one font, hold down the Shift key while you click additional single fonts, or drag to select a group.
- To select all the fonts, hold down the Shift key while you drag. Do this if you have no disk space problem. It's best to copy a whole font family at once if possible.
- To deselect a selected font, Shift-click.

When you make a selection, the name, size, and a sample of the font are shown at the bottom of the window. See Figure 3-10.

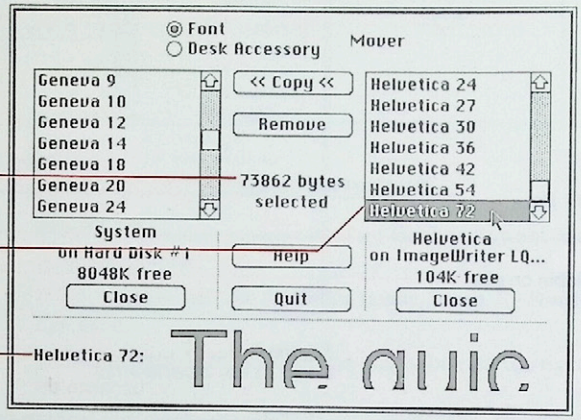


Figure 3-10
A single font selected

8. Click Copy to copy the selected fonts to the System file.

   If a font with the same name as the one you selected already exists in the opposite list, it will be replaced by the selected font. However, it is better to remove the old fonts first and then copy the new ones to your startup disk.

9. Close the font file you just copied from; then click Open; then click Eject.

10. Repeat steps 3 through 9 to copy fonts from the other two disks.

    Use the buttons to switch and eject disks when necessary: click Open to display lists of any other font files; use Eject or Drive to look at font files on other disks.

11. Click Quit when you have finished moving fonts.

    ❖ *Note:* See your Macintosh owner's guide or utilities guide for more complete information on the Font/DA Mover.

Important It's not a good idea to load and unload fonts between documents or between two computers. Some applications record font information from the System file, and changing those files may affect the appearance of fonts in documents already created.

Printing documents

Once you have connected your ImageWriter LQ to your Macintosh, printing **documents** is simple:

1. Create a document using any application (or use one that you have already created).
2. Choose Page Setup from the File menu and confirm the settings.
3. Choose Print from the File menu if your document is open, or select the document in the Finder and choose Print from the Finder's File menu.
4. Select printing options, to control the way your document will look, from the choices that appear in the Print dialog box.

   The Print dialog box lets you select one of three print qualities, the pages you want to print, the number of copies to print, and other printing options.

   ❖ *Cut Sheet Feeder attached?* The Options button lets you make bin selections. However, your application may not take full advantage of the Cut Sheet Feeder. See Appendix A for more information.

5. Click OK to print the document.

   Remember that the printer and the printer's Select light must be on so you can print.

   The ImageWriter LQ will print your document when you click OK.

Important Be sure to reselect ImageWriter LQ in the Chooser and verify Page Setup each time you print a document on a different type of printer. Page sizing is different in the ImageWriter and LaserWriter®, for example, so document formatting changes. Checking the Chooser and Page Setup ensures that your document will appear as it will print.

Choose the Page Setup or Print commands from the File menu of your application when you want to specify the number of copies, the size of the paper that you'll be printing on, a Cut Sheet Feeder bin selection, or printing orientation (widthwise or lengthwise). In some applications, the Page Setup command lets you choose print reduction sizes and document margins. The commands may have different names.

Text formatting, page numbering, and other formatting possibilities (like indentation, tabbing, column width, and spacing) are controlled from the application. Font type and size can be selected within an application but printed output is controlled by the fonts on your startup disk.

Important Choices you make in Macintosh software always override ImageWriter LQ Control Panel button and DIP switch settings.

Chapter 4

Connecting the ImageWriter LQ to Your Apple II Computer

This chapter shows you how to

- connect the ImageWriter LQ to an Apple IIGS, Apple IIc, or Apple IIe computer
- test the connection between your printer and computer
- print documents with your Apple II and ImageWriter LQ

This chapter assumes that you have set up and tested your ImageWriter LQ. If you have not done so, see Chapter 2.

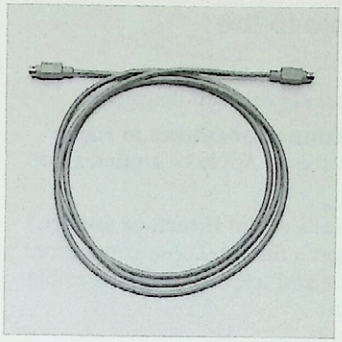
Preparing the printer

Before you connect your ImageWriter LQ to your Apple II computer, check the part number on your Apple **serial interface cable** to make sure that you have the correct cable for your computer. Figure 4-1 shows each of the cables.

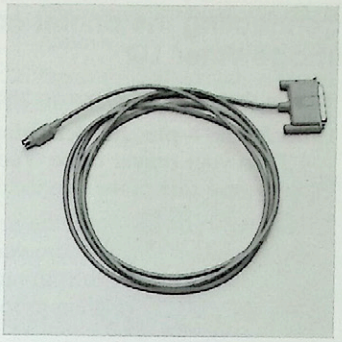
- For Apple IIGS: Apple IIGS Peripheral Adapter Cable, Part No. M0197
- For Apple IIc: Apple IIc Peripheral-8 Cable, Part No. A2C4313 or A2C4312
- For Apple IIe: Apple IIe Printer-8 Cable, Part No. A9C0314 or A9C0313

Important If you are connecting the ImageWriter LQ to an AppleTalk network, you do not need a serial interface cable. Follow the instructions in Chapter 5, "Connecting the ImageWriter LQ to Your AppleTalk Network," to connect the printer and install the printer driver software. Then refer to the last section in this chapter, "Printing Documents," for information about printing with an Apple II computer.

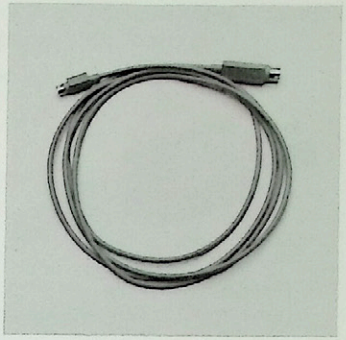
Warning If your serial interface cable does not have the proper connectors, don't try to make it fit; see your authorized Apple dealer before continuing.



Apple IIgs, PN # M0197



Apple IIe and Apple IIgs Upgrade with Super Serial Card, PN # A9C0314



Apple IIc, PN # A2C4313

Figure 4-1
Serial interface cables for Apple II computers and the ImageWriter LQ

Important Your Apple computer and its peripheral devices were FCC-certified under test conditions that include use of shielded cables and connectors between system components. It is important that you use shielded cables and connectors to reduce the possibility of causing interference to radios, television sets, and other electronic devices.

Warning Always make sure that you have turned off both the computer and a peripheral device, such as a printer, before connecting or disconnecting them. Changing cables when the power is on can damage your equipment.

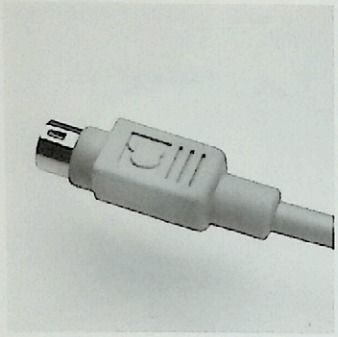


Figure 4-2
The 8-pin, minicircular connector

Connecting the printer cable to the ImageWriter LQ

Follow these steps to connect the printer cable to the printer:

1. Locate the **8-pin, minicircular connector** (shown in Figure 4-2) on your printer cable. You'll see an Apple or a printer icon on the top side of the connector.
2. Plug the connector into the printer's **serial interface socket.** (See Figure 4-3.) Make sure you get a firm fit. Loose connections can cause interference with radios and television sets, scramble data, or stop the printing process.

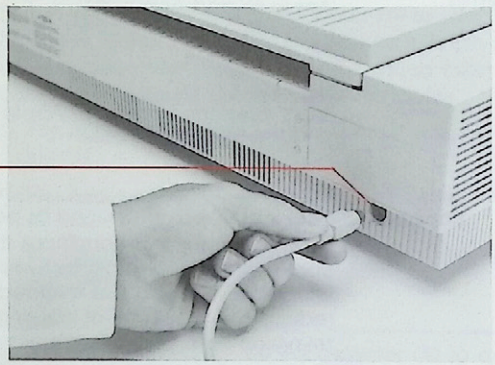


Figure 4-3
Plugging the printer cable into the printer

Changing DIP switch settings

The ImageWriter LQ's default data transmission speed is set at 19,200 **baud.** Because Apple II computers transmit data at a speed of 9600 baud, you must change two DIP switch settings on the printer so it transmits data at the same speed as your computer.

To change the printer DIP switch settings, follow these steps:

1. Make sure the printer is off. If you have pin-feed paper loaded, remove it so you can open the printer's rear cover.
2. Open the DIP switch cover at the left rear of the printer, under the rear cover. See Figure 4-4.

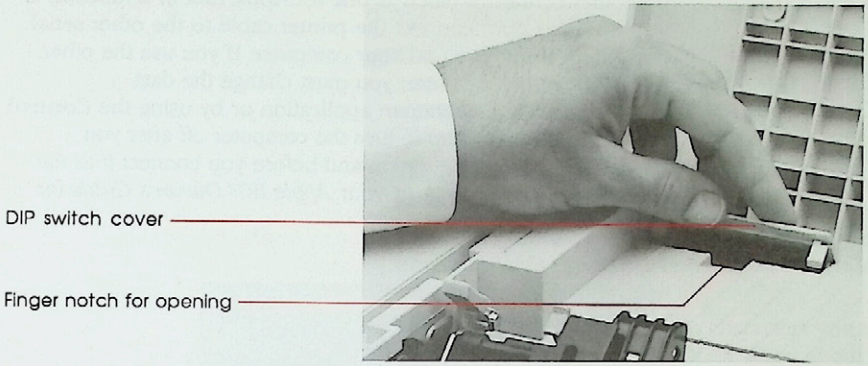


Figure 4-4
DIP switch cover

3. Locate the middle block (SW2) of switches. The DIP switch label on the inside cover identifies default switch settings. Open DIP switches point towards the back of the printer; closed DIP switches point towards the front. See Figure 4-4.
4. With a small screwdriver or pen, flip switches 1 and 2 on block SW2 to the down, or closed, position, towards the front of the printer.

   Closing SW2-1 and SW2-2 sets the printer data transmission rate to 9600 baud. If you are using some other rate, see Table C-2 in Appendix C for the appropriate settings.
5. Replace the DIP switch cover. Reload pin-feed paper. Then close the rear and front covers.

Making Apple II connections

Find the section that pertains to your computer and follow the instructions.

Connecting to an Apple IIGS

To connect the printer to an Apple IIGS, follow these steps:

1. Insert the free end of the printer cable into the Printer port. See Figure 4-5.

   If another connector (such as one for AppleTalk or a modem) is in the Printer port, connect the printer cable to the other serial port (the Modem port) on your computer. If you use the other serial port for your printer, you must change the data configuration from within an application or by using the **Control Panel** program. Be sure to turn the computer off after you change the data configuration and before you connect it to the printer. See Appendix A in your *Apple IIGS Owner's Guide* for details.

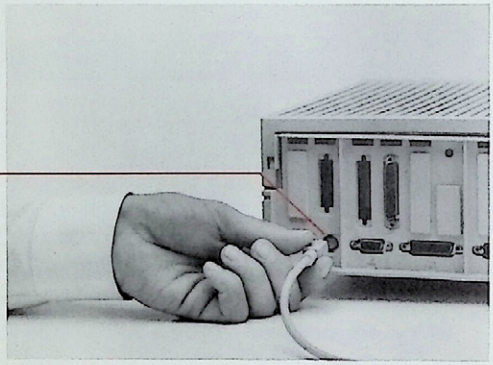


Figure 4-5
Connecting the printer cable to the Apple IIGS Printer port

2. Remove any disks from the disk drives so you can test the printer-to-computer connection.
3. Turn on the monitor.
4. Turn on the computer; ignore the Check Disk Drive message.

5. Turn the printer on and make sure that the Select light is on (paper should be loaded already).
6. Press Control-Reset.

   You'll see the Applesoft prompt on the screen:

   ```
   ]
   ```

7. Type `PR#1` and press Return.

   The printer will respond immediately. If there's no response, your printer-to-computer connections probably aren't good. If repeating steps 1 through 7 doesn't help, see Chapter 8, "Troubleshooting."

   The PR#1 command tells the computer to send whatever you type to the printer instead of to the screen.

8. Type any characters you want. `This is a test` or `Are the connections good?` will do. Press Return to send your message to the printer.

   The ImageWriter LQ prints the characters you type, along with the words SYNTAX ERROR. Don't worry about this message.

   If your words print, your connections are good; the computer can send data to the printer, and the printer can print the data. This means that if a problem arises later, you can trace the trouble to two *probable* areas: a loose connection or an improperly configured program (your word processor or spreadsheet, for example).

   If your ImageWriter LQ does not print what you type, see Chapter 8, "Troubleshooting."

9. To return output to the screen, press Control-Reset.

Connecting to an Apple IIc

To connect the printer to an Apple IIc, follow these steps:

1. Insert the free end of the printer cable into the Apple IIc Printer port. See Figure 4-6.

   If another connector (such as one for AppleTalk or a modem) is in the Printer port, connect the printer cable to the other serial port (the Modem port) on your computer.

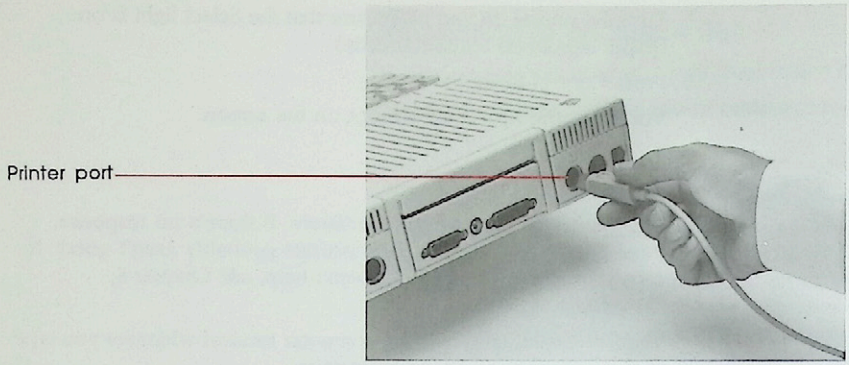


Figure 4-6
Connecting the printer cable to the Apple IIc Printer port

2. Remove any disks from the disk drives so you can test the printer-to-computer connection.
3. Turn on the monitor.
4. Turn on the computer; ignore the Check Disk Drive message.
5. Turn the printer on and make sure that the Select light is on (paper should be loaded already).
6. Press Control-Reset.

   You'll see the Applesoft prompt on the screen:

   ```
   ]
   ```

7. Type `PR#1` and press Return.

   The printer will respond immediately. If there's no response, your printer-to-computer connections probably aren't good. If repeating steps 1 through 7 doesn't help, see Chapter 8, "Troubleshooting."

   The PR#1 command tells the computer to send whatever you type to the printer instead of to the screen.

8. Type any characters you want. `This is a test` or `Are the connections good?` will do. Press Return to send your message to the printer.

   The ImageWriter LQ prints the characters you type, along with the words SYNTAX ERROR. Don't worry about this message.

   If your words print, your connections are good; the computer can send data to the printer, and the printer can print the data. This means that if a problem arises later, you can trace the trouble to two *probable* areas: a loose connection or an improperly configured program (your word processor or spreadsheet, for example).

   If your ImageWriter LQ does not print what you type, see Chapter 8, "Troubleshooting."

9. To return output to the screen, press Control-Reset.

Connecting to an Apple IIe

Connecting the printer to an Apple IIe requires configuring and installing a **serial interface card** such as the Apple II Super Serial Card. Once the card is properly configured, you can connect the ImageWriter LQ to your computer and test the connection.

- *A note for Apple IIe users who have upgraded their systems to Apple IIGS level:* Follow the instructions in "Connecting to an Apple IIGS" to connect the printer to your computer. The serial interface is built into the Apple IIGS, so you can plug your printer directly into the serial port. You no longer need a serial interface card. If you want to use your Super Serial Card anyway, follow the Apple IIe instructions and then use the Apple IIGS Control Panel program to make your slot selection.

Follow these steps to get set up:

1. Turn off your computer, but do not unplug it.

Warning Never open your computer, handle its circuitry, or install an interface card unless you have turned off the computer's power switch. This is important; you could damage your computer and interface cards by working inside the computer while the power is on.

2. Grasp the back edge of the lid and lift up. Set the lid aside.
3. Touch the power supply case to discharge any static electricity you may have collected. The power supply case is the big metal box on the left, inside the computer.

Warning The power supply can get hot in normal use. If the computer has been on, turn it off and wait at least 5 minutes to allow the metal case to cool down before touching the power supply.

Before working with internal parts, turn off the computer's power switch, remove the computer's cover, and touch the power supply case to discharge any static electricity that has accumulated on your clothes or body.

4. If the Super Serial Card is in your computer, remove it. Be sure not to rock it from side to side, and don't touch the gold "fingers" along the bottom edge of the card.

You are now ready to configure your Super Serial Card.

Configuring the Super Serial Card

Configuring the Super Serial Card takes two steps: setting the jumper block and setting the DIP switches. See Figure 4-7 and the *Apple II Super Serial Card User's Manual.*

❖ *Note:* If you had an ImageWriter or ImageWriter II connected to your Super Serial Card, your card should be configured correctly. Double check the DIP switches in Table 4-1 and then go on to the next section.

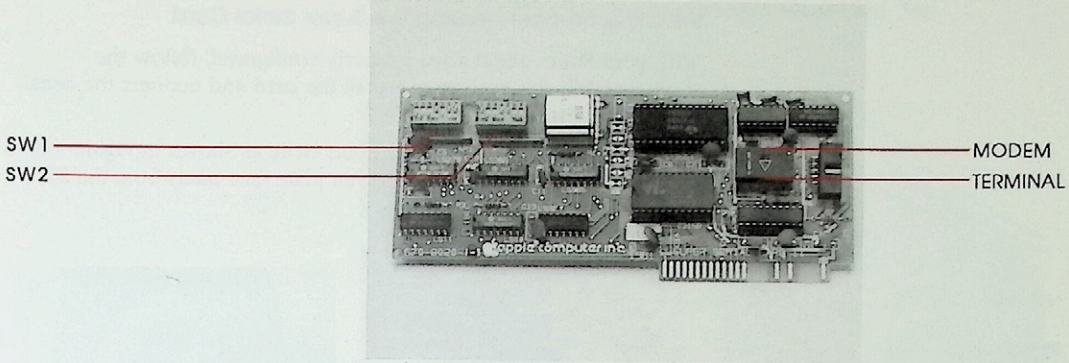


Figure 4-7
The Apple II Super Serial Card

1. Make sure that the triangle-shaped mark on the jumper block points to TERMINAL. If it does not, gently unplug the block from the card (using a flat-bladed screwdriver or a chip puller), rotate it accordingly, and plug it back into the card.
2. Set the switches as indicated in Table 4-1. Open switches point towards the gold fingers on the card; closed switches point away.

Table 4-1
Super Serial Card switch settings

SW1	Function	SW2	Function
1 Open	9600 baud	1 Closed	8 data, 1 stop bit
2 Open	9600 baud	2 Open	No delay
3 Open	9600 baud	3 Open	Line width 80/ Video off
4 Closed	9600 baud	4 Closed	
5 Open	Printer mode	5 Closed	Line feed after carriage return
6 Closed	Printer mode	6 Open	Interrupts off
7 Closed	Normal CTS	7 Open	Normal CTS

Note: Open is the same as off; closed is the same as on.

Installing and connecting the Super Serial Card

With your Super Serial Card properly configured, follow the instructions in this section to install the card and connect the serial interface cable.

1. Slide the nut plate onto the ribbon cable as shown in Figure 4-8. Make sure that the nuts on the nut plate face *away* from the 25-pin connector.

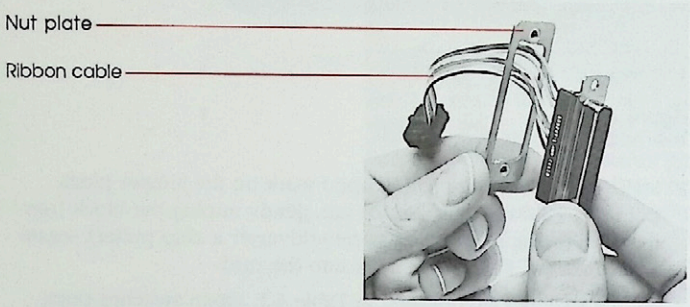


Figure 4-8
Sliding the nut plate onto the ribbon cable

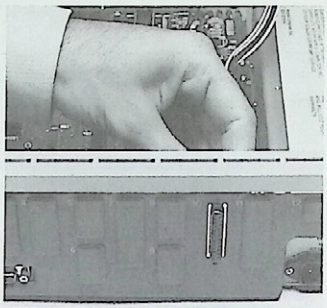


Figure 4-9
Positioning the connector and the nut plate

2. Hold the connector and nut plate up to one of the large openings in the back panel. (See Figure 4-9.) It's best to choose one of the openings near slot 1.
3. Attach the 25-pin connector to the back panel using the screws and wrench that came with the Super Serial Card. (See Figure 4-10.) Don't overtighten the screws (you could bend the connector).

4. Connect the ribbon cable to the Super Serial Card. See Figure 4-11.

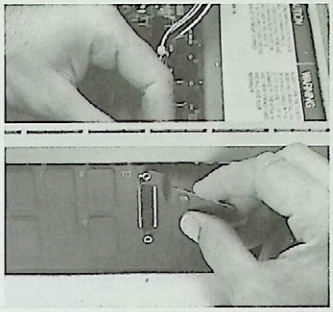


Figure 4-10
Attaching the connector to the back panel

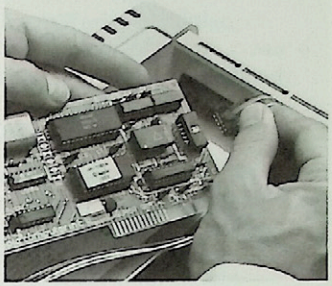


Figure 4-11
Connecting the ribbon cable to the card

5. Put the card in slot 1. Install the card by rocking it from back to front. (See Figure 4-12.) Don't rock it from side to side, and don't touch the gold "fingers" along the bottom edge of the card.

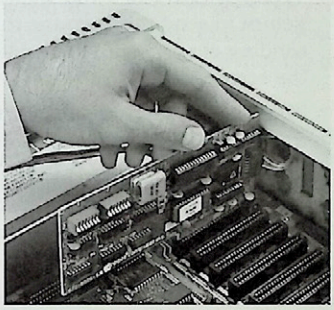


Figure 4-12
Installing the Super Serial Card in slot 1

6. Replace the cover.
7. Connect the cable from your printer to the connector attached to the back panel of your computer.

Testing the connection

Follow these steps to test the connection between the printer and your computer:

1. Make sure that drive 1 is empty.
2. Turn on the monitor.
3. Turn on the computer.
4. Turn the printer on and make sure that the Select light is on (paper should be loaded already).
5. If your computer automatically starts the disk drive, press Control-Reset to stop the disk drive and display an Applesoft prompt ( ]) on the screen.
6. To send the keyboard output to the printer instead of to the screen, type `PR#1`. (If you put the printer card in a slot other than slot 1, type that slot number instead. For example, type `PR#2` if you put the card in slot 2.) Press Return.
7. Type any characters you want; `This is a test` will do. Press Return to send this message to the printer. Because you are sending characters to the printer, your typing will not appear on the screen.

   The printer prints the characters you type, along with the words SYNTAX ERROR. Don't worry about this message. If your words printed, the connection passed the test. If they didn't, see Chapter 8, "Troubleshooting."
8. To return output to the screen, press Control-Reset.

Printing documents

Once you have connected your ImageWriter LQ to your Apple II, printing documents is simple.

Most **application programs** (like AppleWorks, Multiplan, or MousePaint™) have print commands in menus. After you create a document using an application (or open one that you've already created), you simply choose the print command, make your selections, and your ImageWriter LQ does the rest.

Many application programs are designed to take full advantage of ImageWriter LQ features. You generally can select print quality, text formatting, line spacing, page numbering, number of copies, layout, and other formatting possibilities (like indentation, tabbing, and spacing) from options the application provides.

Some applications also provide a place for you to specify additional information about the way that you want to print your documents. If, for example, you want to print certain documents using the Spanish language character set, you can use the Quick Reference Card to find the codes that represent that character set, and enter those codes in the appropriate place in your application or document.

When an application does not provide a way for you to specify special printing information, you can sometimes use the DIP switches in the ImageWriter LQ to change print settings.

Important While you can set and change many physical controls on the ImageWriter LQ to control formatting, software settings always override ImageWriter LQ button and switch settings.

If you are printing programs that you have written, see Appendix E, "Controlling Printer Output Directly: For Apple II Users," and the Quick Reference Card, for the control codes and escape sequences that turn printer functions on and off within programs. For more complete information, see the *ImageWriter LQ Reference* manual.

ImageWriter LQ built-in fonts

The Apple IIGS, Apple IIe, and Apple IIc print with the fonts stored in the printer. (The Macintosh prints from fonts stored in the System file.) The ImageWriter LQ built-in fonts include:

- **Draft Quality**—fixed-pitch 10-point
- **Draft Quality**—proportional-pitch
- **Near Letter Quality**—fixed-pitch 10-point
- **Near Letter Quality**—proportional-pitch
- **Letter Quality**—proportional-pitch

The Draft and Near Letter Quality fixed-pitch fonts are compatible with ImageWriter II line length.

The Draft and Near Letter Quality proportional-pitch and the Letter Quality proportional-pitch are new to the ImageWriter family of fonts. DIP switch settings allow you to access all three proportional fonts. Figure 4-13 has print samples.

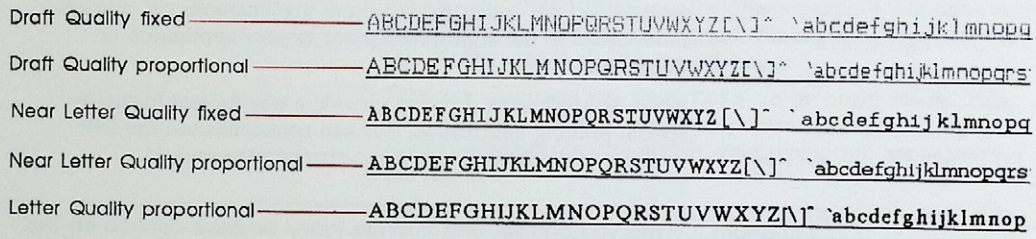


Figure 4-13
ImageWriter LQ print samples of built-in fonts

Generally, your access to fonts is determined by the application program you are using. To control font selection with the Print Quality button or with DIP switch settings, see Chapter 6, "Using the ImageWriter LQ Control Panel." To control font selection with program commands, see Appendix E, "Controlling Printer Output Directly: For Apple II Users."

Important You must have selected proportional printing with DIP switches SW1-6 and SW1-7 closed, or have selected proportional printing through your application, to access the printer's built-in proportional fonts.

In addition, if you are using fixed pitch and you select Letter Quality with the control panel button, the printer will automatically default to the NLQ fixed-pitch font.

Chapter 5

Connecting the ImageWriter LQ to Your AppleTalk Network

With the ImageWriter II/LQ AppleTalk® Option, your printer can receive data from an **AppleTalk Personal Network** instead of directly from a computer. The network lets many computers share the same printer.

This chapter shows you how to

- install the AppleTalk Option card in your ImageWriter LQ
- set the printer DIP switches for AppleTalk use
- connect your printer to the AppleTalk network
- install ImageWriter LQ AppleTalk software on a Macintosh computer
- test and troubleshoot your installation

Important If you are using Macintosh computers, once you've installed AppleTalk, be sure to see "Working With Macintosh Fonts for the ImageWriter LQ" and "Printing Documents" in Chapter 3 for important information about moving fonts to maximize printing capabilities.

What you need

This chapter assumes that you have already set up your AppleTalk network. If you have not set up the network yet, do it now. Refer to the *AppleTalk Personal Network Installation Guide* that comes with your AppleTalk Connector Kit.

Before adding your ImageWriter LQ to the network, make sure that you have all the pieces. Besides this owner's manual, you should have

- the AppleTalk Option package, containing the AppleTalk card and *ImageWriter II/LQ AppleTalk* disk
- the AppleTalk Connector Kit, containing an **AppleTalk System Connector,** a 2-meter shielded cable, and a **cable extender**
- a small Phillips-head screwdriver

Figure 5-1 shows all the pieces you need.

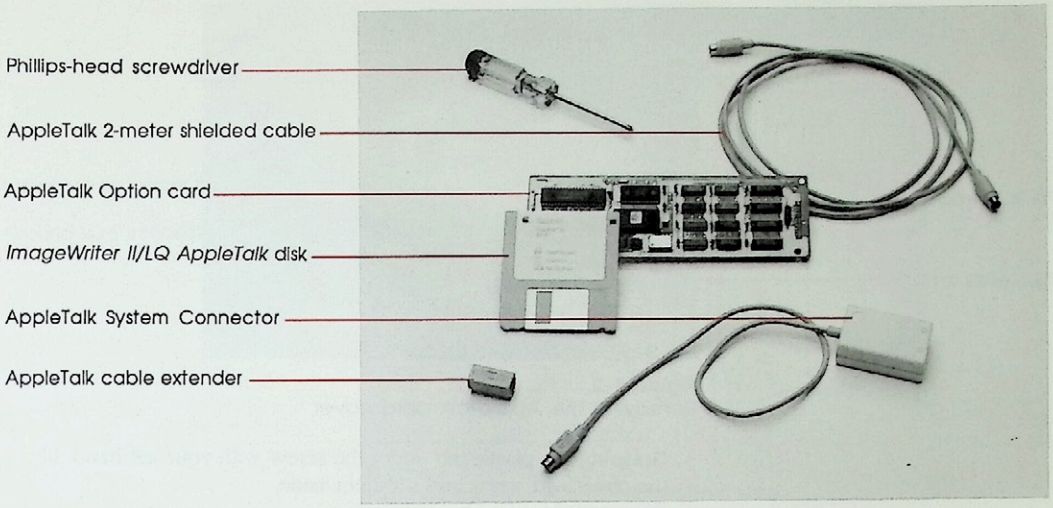


Figure 5-1
What you need

You may also need a 10-meter extension cable, available in the AppleTalk Cable Kit with one cable extender. See your authorized Apple dealer for information about these and other AppleTalk products.

❖ *Note:* You don't need the four plastic support posts that come in the AppleTalk Option package. They are used only for installing the card in the ImageWriter II.

Installing the AppleTalk Option card

Before beginning, make sure that the ImageWriter LQ is plugged in and turned off. If necessary, remove paper from the printer and detach the Cut Sheet Feeder and the feeder's paper guide plate.

1. Open the front and rear covers of the printer.
2. Locate the single Phillips-head screw at the left rear of the printer. (See Figure 5-2.) Turn the screw counter-clockwise to free the card cover.

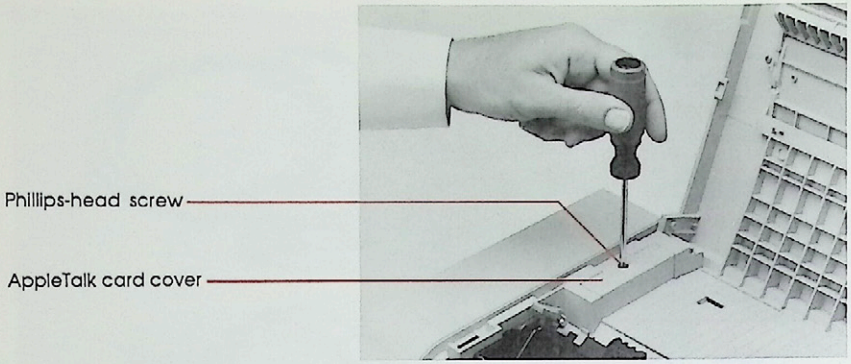


Figure 5-2
Removing the AppleTalk card cover

3. Grasping the plastic tab under the screw with your left hand, lift the cover and screw and set them aside.

Warning Never install or remove an interface card or touch circuitry parts when the printer is on. Doing so can damage the printer or its interface card.

Before touching the card, be sure to touch the metal frame inside the printer to discharge any static electricity that has accumulated on your clothes or body.

---

4. Remove the AppleTalk card from its antistatic bag, handling the card by its edges. Avoid touching the card's components.

Important Save the card's antistatic bag. If you ever need to remove, store, or transport the card, return it to the bag to protect it from electrostatic damage. To protect the card from breakage, put it between the foam cushions in its box.

---

5. Locate the metal lug in the card chamber on the "floor" of the printer. (See Figure 5-3.) Slide the connector on the end of the card's ground wire over the post on this lug.

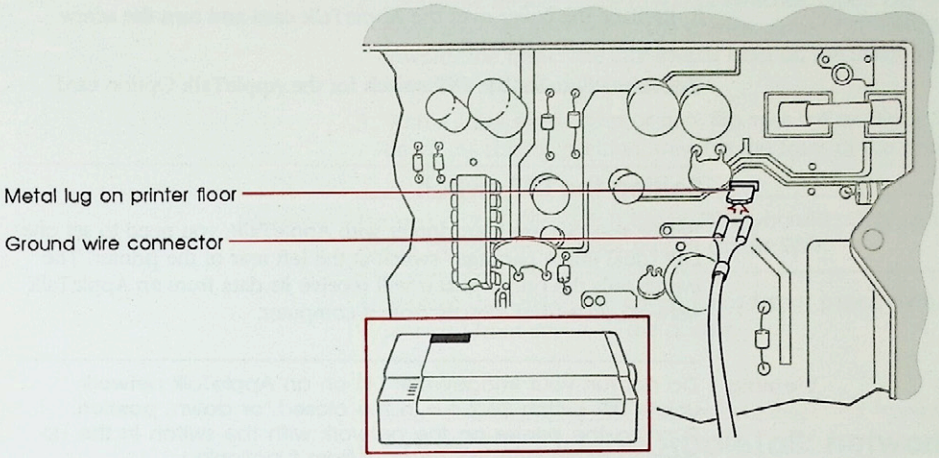


Figure 5-3
Connecting the AppleTalk ground wire

6. Holding the card on the right side (component side up) lower the right end onto the plastic support post. See Figure 5-4.

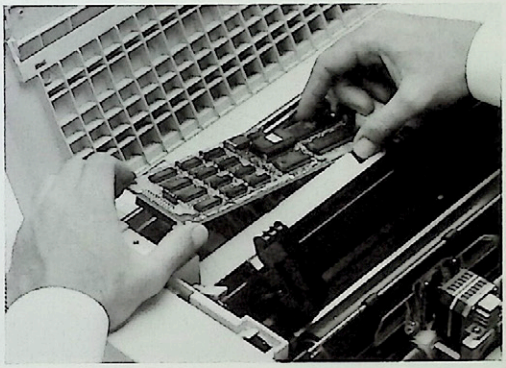


Figure 5-4
Installing the AppleTalk card

7. Press the left side of the card down firmly but gently to fasten the card's connector to the printer's connector.

8. Replace the cover over the AppleTalk card and turn the screw clockwise to tighten it.

You're ready to set the DIP switch for the AppleTalk Option card.

Setting the DIP switch

Before you can use your printer with AppleTalk, you need to set one DIP (dual inline package) switch at the left rear of the printer. The switch tells the printer that it will receive its data from an AppleTalk network instead of directly from a computer.

Warning Do not run your ImageWriter LQ on an AppleTalk network unless DIP switch SW2-4 is in the closed, or down, position. Running the printer on the network with the switch in the up position could stop the network from functioning.

1. Make sure that the printer is off.
2. Open the DIP switch cover at the left rear of the printer with your fingernail. See Figure 5-5.

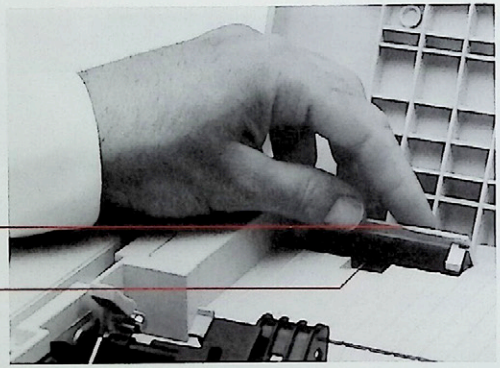


Figure 5-5
DIP switch cover

2. Locate the middle block (SW2) of switches. Open DIP switches point towards the back of the printer; closed DIP switches point towards the front. The DIP switch label on the inside of the cover identifies default switch positions.

3. With a small screwdriver or pen, flip switch 4 on block SW2 to the down, or closed, position, towards the front of the printer.

Warning Do not adjust DIP switch block SW3 yourself. Only authorized Apple dealer technicians should adjust SW3.

4. Replace the DIP switch cover. Reload your paper, then close the rear and front covers of the printer.

Connecting to the AppleTalk network

With the printer reassembled, you can connect it to the AppleTalk network. Make sure that you have your AppleTalk System Connector, cable(s), and, if necessary, cable extender(s) at hand. Regardless of whether you're connecting the ImageWriter LQ to the end of the network or between two devices already on the network, you need to prepare the printer for the network.

❖ *By the way:* Apple 2- and 10-meter cables are PVC-coated and are not designed to be routed through walls or suspended ceilings unless through a conduit.

If you have any questions regarding how the printer fits into your network architecture, see the *AppleTalk Personal Network Installation Guide.*

Network preparations

Before connecting the ImageWriter LQ to the network, you need to plug the System Connector into the printer and the AppleTalk cable from the network into the System Connector. Follow these steps:

1. Make sure the printer is turned off. If the printer is connected to a computer, disconnect the cable from the printer's serial interface socket.

2. Plug the AppleTalk System Connector's built-in cable into the printer's serial interface socket. See Figure 5-6.

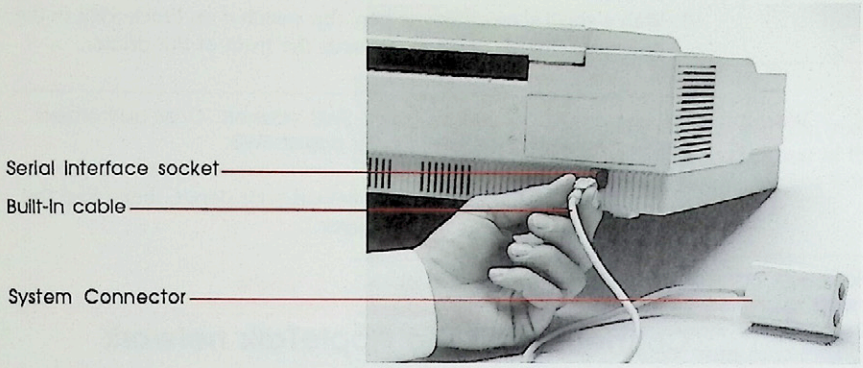


Figure 5-6
Plugging the AppleTalk System Connector into the printer

3. Plug the AppleTalk cable into either socket on the AppleTalk System Connector, as shown in Figure 5-7.

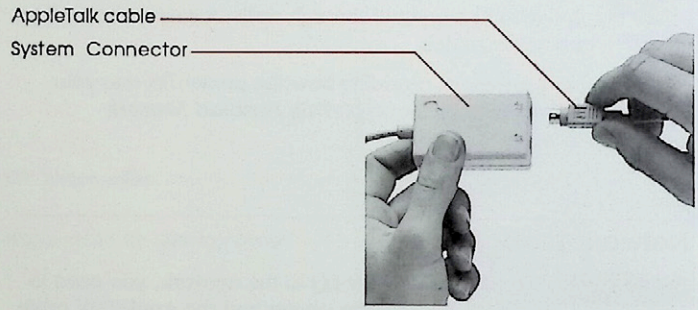


Figure 5-7
Plugging the AppleTalk cable into the System Connector

Important When connecting any network parts, make sure that the arrows on each part meet each other. (The arrows indicate the side that should be up.)

If you are not using extension cables, skip to the appropriate section—either "Connecting to the End of the Network" or "Connecting Between Two Network Devices." The rest of this section shows you how to add extension cables to the printer's AppleTalk cable.

4. If you want to add an extension cable to your AppleTalk cable, press the cable extender onto the open end of the printer's AppleTalk cable, as shown in Figure 5-8.

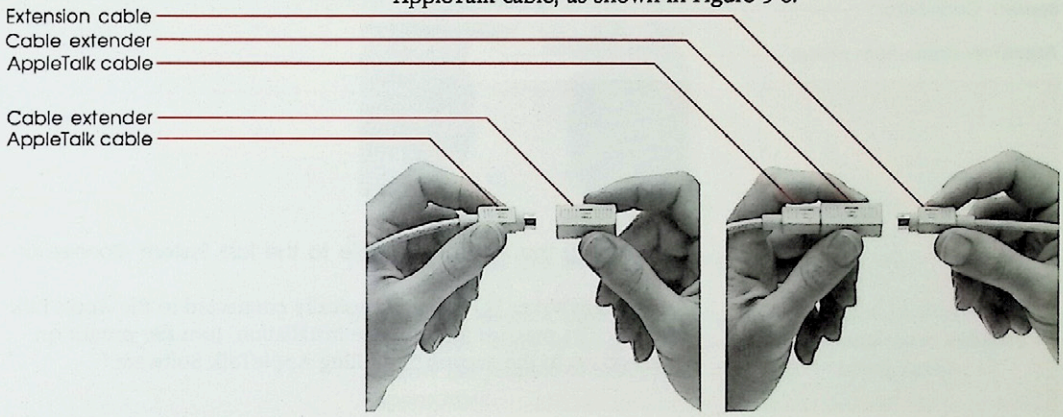


Figure 5-8
Connecting a cable extender to an AppleTalk cable

Figure 5-9
Connecting an extension cable to the cable extender

5. Press either end of the extension cable into the open end of the cable extender, as shown in Figure 5-9.

Connecting to the end of the network

To connect an ImageWriter LQ to the end of the network, plug the open end of the AppleTalk cable or extension cable from the printer into the open socket of the last System Connector on the network. See Figure 5-10.

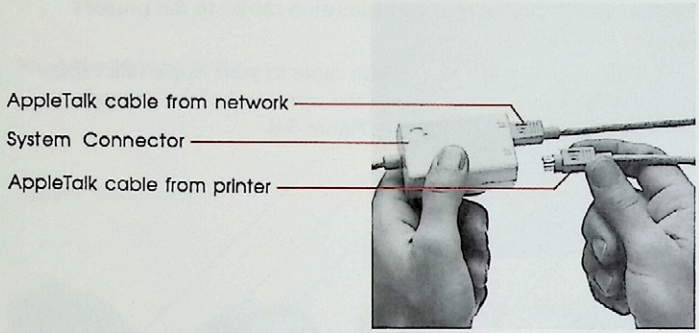


Figure 5-10
Connecting the AppleTalk cable to the last System Connector

Your ImageWriter LQ is now physically connected to the AppleTalk network. To prepare for software installation, turn the printer on. Then go on to the section "Installing AppleTalk Software."

Connecting between two network devices

Connecting a device between other devices on the network can momentarily disrupt network activities. If you must connect the ImageWriter LQ to the network while others are using the network, warn them beforehand, so they can wrap up network activities (such as printing, electronic mail, and file sharing) before you interrupt the network. People should not use the network while you are altering it. Work quickly but carefully. Tell other users when you're finished.

Before you begin, study Figure 5-11. It illustrates the way things are now. Devices 1 and 2 are connected on the network. The ImageWriter LQ, ready for connection, stands between them. Study it in relationship to where you intend to put the printer on your network.

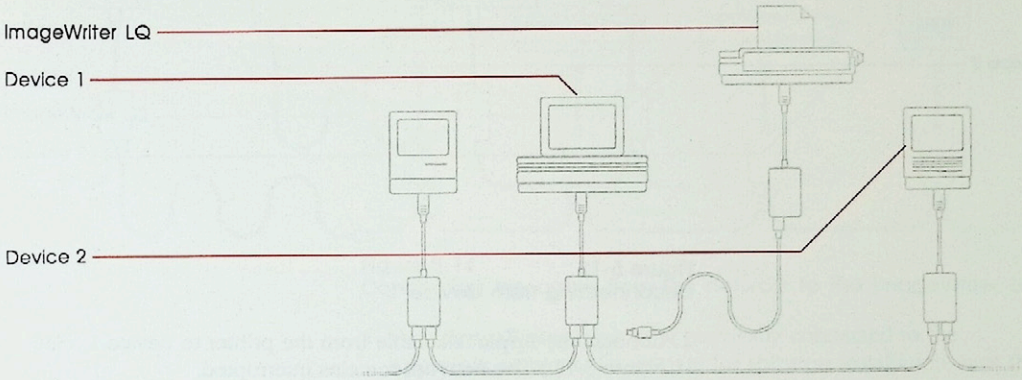


Figure 5-11
The network before connecting the ImageWriter LQ

❖ *Note:* The network shown in Figures 5-11 through 5-14 shows no extension cables or adaptors. If you are using extension cables, follow the *pattern* of connecting and disconnecting cables, as appropriate.

To install the ImageWriter LQ between two network devices, follow these four steps:

1. To begin, disconnect the network cable from device 1. (See Figure 5-12.) This interrupts the network.

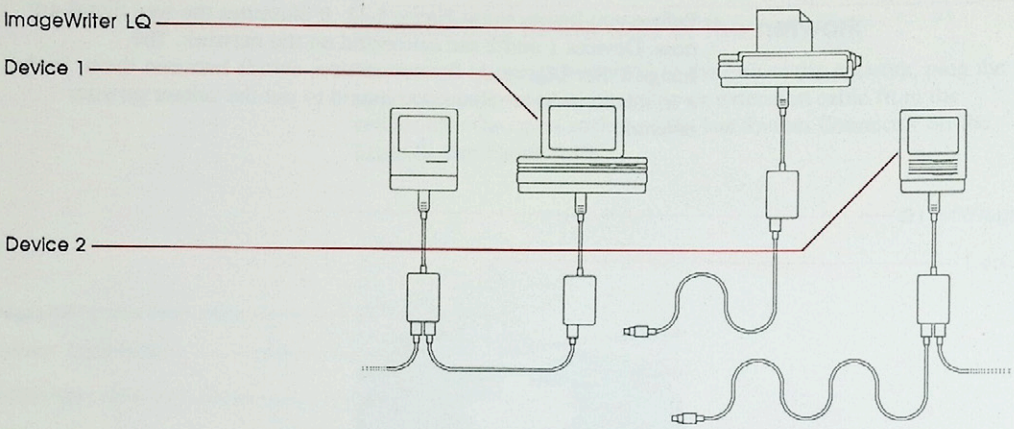


Figure 5-12
Disconnecting from device 1

2. Connect the AppleTalk cable from the printer to device 1. (See Figure 5-13.) The network remains interrupted.

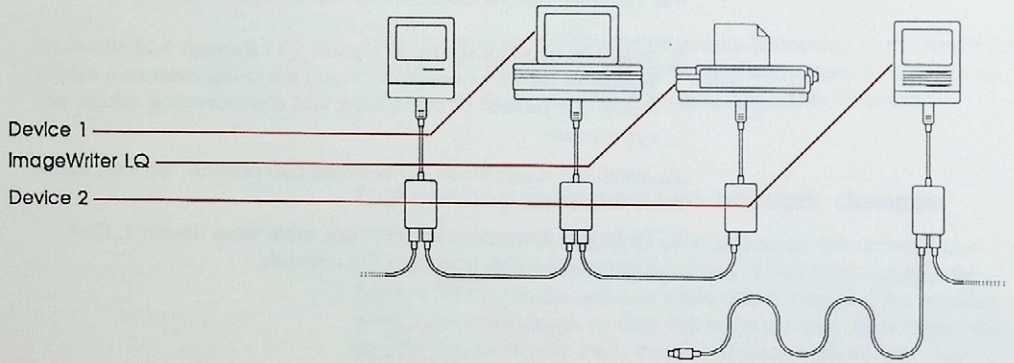


Figure 5-13
Connecting the AppleTalk cable from the printer to device 1

3. Connect the open cable end from the network (from device 2) to the ImageWriter LQ, as indicated in Figure 5-14. The network is no longer interrupted.

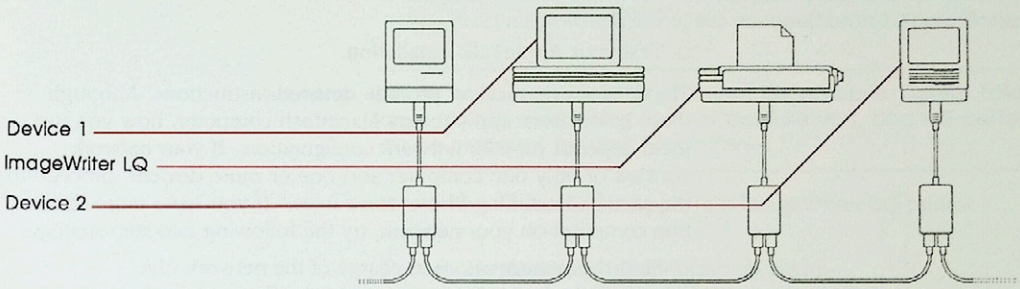


Figure 5-14
Connecting the cable from the network to the ImageWriter LQ

4. Your ImageWriter LQ is now physically connected to the AppleTalk network. To prepare for software installation, turn the printer on.

You've completed the hardware portion of your AppleTalk ImageWriter LQ installation. Continue to the next section for instructions on AppleTalk software installation.

Installing AppleTalk software

To print through the AppleTalk network, you need to install AppleTalk software on your hard disk or on your 800K startup disks. You'll follow four basic steps to install AppleTalk software:

- Install the printer resource from the *ImageWriter II/LQ AppleTalk* disk in your System file.
- Name your printers with the Namer application.
- Choose the printer that you want to work with using the Chooser accessory.
- Test your AppleTalk installation.

The sections that follow provide detailed instructions. Although these instructions apply to any Macintosh computer, how you use them depends on your network configuration. If your network consists of only one computer and one or more devices, proceed to the section "Installing Printer Resources." If you have more than one computer on your network, try the following two-step strategy:

- First, the person who is in charge of the network (the coordinator) should go through the software installation procedures. If the network has more than one ImageWriter LQ or LaserWriter®, the network coordinator should run the Namer to name network devices.
- Second, the network coordinator should route this manual and the *ImageWriter II/LQ AppleTalk* disk, as well as *ImageWriter LQ Disk 1*, *LQ Fonts Disk 2*, and *LQ Fonts Disk 3* to the rest of the people on the network, so they can install AppleTalk software on their startup disks, choose their printers, and install Macintosh 3X fonts. They should not, however, do any further naming of devices.

  ❖ *Apple II computers on the network?* To prepare Apple II computers with AppleTalk capability for use on a network, see the *ImageWriter II/LQ AppleTalk Option User's Guide.*

Installing a printer resource

The printer resource that lets you use the ImageWriter LQ on an AppleTalk network is on the *ImageWriter II/LQ AppleTalk* disk.

You install the printer resource in the System Folder on your startup disk. If you use separate startup disks for some applications, you must install the AppleTalk ImageWriter LQ printer resource on each of them.

- *Current system software:* You must use current versions of the System file (version 4.1 or later), Finder (version 5.5 or later), and Chooser (version 3.1 or later) with the AppleTalk ImageWriter LQ printer resource. If you're not sure which version numbers you're using, use the Get Info command to find out. If you need a software update, see your authorized Apple dealer.

Warning Never keep more than one System file and one System Folder on a startup disk. Doing so may confuse you, and will certainly cause problems for your Macintosh.

Here's how to install the AppleTalk ImageWriter LQ printer resource:

1. Turn the Macintosh off and then on again.

   This ensures that new printer resources can be installed without problems.

2. Insert the *ImageWriter II/LQ AppleTalk* disk in the internal drive and open the icon representing the disk by selecting the icon and choosing Open from the File menu, or by double-clicking the icon.

3. Open your startup disk.

4. Drag the LQ AppleTalk ImageWriter icon (it represents the printer resource) to the System Folder on your startup disk.

   If you have inadequate disk space, remove as many printer resources, files, fonts, and desk accessories from your startup disk as necessary. Then repeat steps 1 through 4.

   - *To remove printer resources:* Drag the icon to a backup disk for safekeeping, then drag the icon from your System file to the Trash.
   - *To remove files:* Drag selected files to the Trash.
   - *To remove fonts and desk accessories:* Use the Font/DA Mover (on any of the disks that came with the printer) to select fonts and desk accessories to remove.

5. If you want to install a printer resource on another startup disk, repeat steps 1 through 4.

6. If you have multiple ImageWriters or LaserWriters and intend to name them, keep the *ImageWriter II/LQ AppleTalk* disk in the internal drive and go on to the section "Naming Your Printers."

If you don't intend to name your printer(s), eject the *ImageWriter II/LQ AppleTalk* disk. Restart the Macintosh (with a startup disk containing the LQ AppleTalk ImageWriter icon), and go on to the section "Choosing an AppleTalk Printer."

- *Using direct connect?* If you expect to print directly to an ImageWriter LQ from your Macintosh, you should also install the ImageWriter LQ direct connect printer resource. Open *ImageWriter LQ Disk 1*, and drag the LQ ImageWriter icon to your startup disk.

With a printer resource installed, you can name or choose your printers; see the appropriate sections, which follow.

Naming your printers

If you have more than one printer of the same type installed on your network, naming them is important. Follow the instructions in this section to name your printers. If you have only one printer on your network, naming it is optional.

Important Although it's possible for anyone on your network to rename any network device at any time, no one should rename devices without informing other network users. If you attempt to print on a printer that's been renamed, you'll get a message saying the printer can't be found.

AppleTalk gives each printer on the network a default name. If you have more than one ImageWriter LQ on your network, the network automatically names them *ImageWriter*, *ImageWriter1*, *ImageWriter2*, *ImageWriter3*, and so on, as each one is turned on.

The difficulty with such naming is that you don't know which ImageWriter is which. (Is the printer next to your desk *ImageWriter2* or is that the one down the hall?) To avoid confusion, use the Namer to name each printer. Once you have named your printers, clicking on the LQ AppleTalk ImageWriter icon will give you a list of ImageWriter LQ printers, and clicking on the AppleTalk ImageWriter icon will give you a list of ImageWriter II printers.

❖ *Naming unnecessary?* If you want to skip naming, go to the next section, "Choosing an AppleTalk Printer."

Important Make sure that your printers are plugged in and turned on before naming or choosing them. AppleTalk cannot recognize a printer that is not on.

Follow these steps to name your printers:

1. Open the Namer program from the *ImageWriter II/LQ AppleTalk* disk.

   The Namer shows an icon for each *type* of device on your network, such as ImageWriter, LaserWriter, and File Server. See Figure 5-15.

Icons for types of devices connected

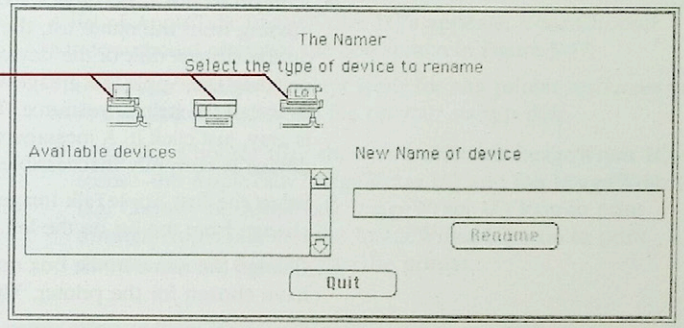


Figure 5-15
The Namer

2. Select the AppleTalk ImageWriter LQ icon.

   As soon as you select an icon, the Namer automatically lists all the devices of that type. When you select the AppleTalk LQ ImageWriter icon, the names (default or specified) of all ImageWriter LQ's on your network appear in the name list; when you select the AppleTalk ImageWriter icon, you'll see a list of ImageWriter II's. See Figure 5-16.

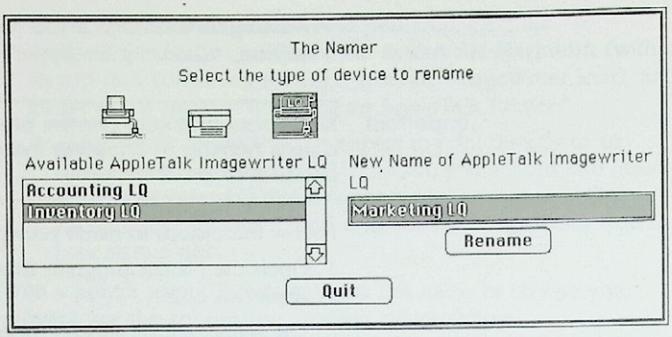


Figure 5-16
Name list for AppleTalk ImageWriter LQ icon

- *Icon problems?* If no device icon appears, or if a printer is missing from the name list, the necessary printer resource is not on the current disk or the device is not turned on. If the device is on, drag the AppleTalk ImageWriter LQ icon to your startup disk to install the printer resource. To discover why a particular icon is gray, just click it. A message will appear explaining why the device is currently inaccessible.

3. Select the first AppleTalk ImageWriter LQ name that you want to change from the list on the left.
4. Change the name in the box on the right to the name that you have chosen for the printer. Then click Rename.

   Create names that make sense. Many people name printers by department location (*Sales*, *Copy Room*) or by the name of the person nearest the printer (*Waldo*, *Hortense*).

   The Namer takes about ten seconds to name a printer.
5. Edit any other AppleTalk ImageWriter LQ names as you see fit.
6. If you have LaserWriter printers or other devices to name, follow the procedures in steps 2 through 5.

   Naming proceeds by type of device. That is, you select the icon for the type of device that you want to name, then name all the devices of that type.
7. When you have named all your devices, click Quit.

After you have named your printers, go to the next section and choose the one you want to use for your current print job.

Choosing an AppleTalk printer

Before AppleTalk can carry text to a printer, you need to tell your Macintosh three things:

- that AppleTalk is connected
- what type of printer (AppleTalk ImageWriter LQ, AppleTalk ImageWriter, LaserWriter) you're choosing
- which particular printer you want to work with

Make sure that you have restarted the Macintosh with AppleTalk installed on your startup disk, and make sure that the printer is plugged in and turned on. Then follow these steps to choose an AppleTalk printer:

1. Select Chooser from the Apple menu.
2. Click on the AppleTalk ImageWriter LQ icon.

   A list of AppleTalk ImageWriter LQ's appears. Your Chooser window should resemble the one shown in Figure 5-17.

   The Chooser window displays icons for any printer resources you have installed in the System file on your startup disk.

   ❖ *Note:* The Chooser may show two different ImageWriter LQ icons—the AppleTalk ImageWriter LQ and the ImageWriter LQ. Choose the AppleTalk ImageWriter LQ icon to print through AppleTalk and the ImageWriter LQ icon to print directly from a computer to the printer.

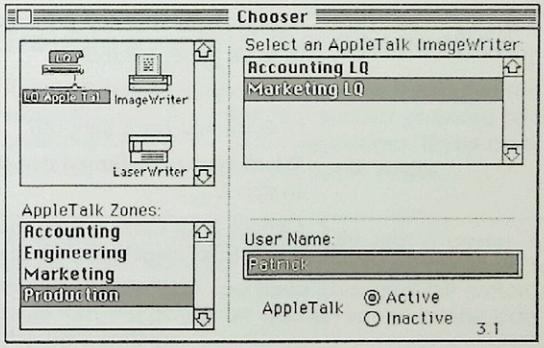


Figure 5-17
The Chooser window

3. Select the name of the ImageWriter LQ that you want to work with.

   ❖ *By the way:* If you have multiple printer resources installed, you can choose a different printer anytime you want with the Chooser. When you choose a different printer, you can prepare document formatting for it, even if that printer isn't currently connected.

   When you run the Chooser from within an application, you should always check Page Setup from the File menu to make sure that the application has recorded your recent choice and that page formatting is correct.

4. Type in your name under User Name.

   Although the ImageWriter LQ doesn't need this information, some network devices (like a file server or LaserWriter) do.

5. Close the Chooser window.

With the AppleTalk hardware and software installed, it's time to test your ImageWriter LQ on the network.

Testing your AppleTalk installation

This section assumes that you have started your Macintosh with an AppleTalk startup disk and that you've chosen an ImageWriter LQ with the Chooser.

1. Check the ImageWriter LQ you're about to test:

   - ☐ Is it plugged in and turned on?
   - ☐ Is its paper loaded?
   - ☐ Is its green Select light on?
   - ☐ Is the red Error light off?

   When you've confirmed that the ImageWriter LQ is ready, go on to step 2.

2. Choose Print Catalog from the File menu. You'll see the AppleTalk ImageWriter LQ dialog box. See Figure 5-18.

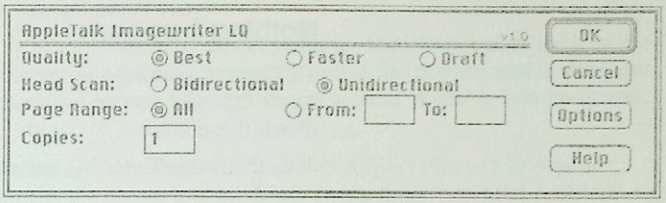


Figure 5-18
AppleTalk ImageWriter LQ dialog box

3. Click OK.

   After a few moments, the ImageWriter LQ should print a directory of files in the open window on your screen in the current view (by Icon, by Name, and so on).

   If you choose Draft Quality, the ImageWriter LQ will print words rather than icons.

If your ImageWriter LQ produced an accurate representation of the current disk directory, congratulations! Your printer is correctly installed on the AppleTalk network. Now be sure to read the sections "Working With Macintosh Fonts for the ImageWriter LQ" and "Printing Documents" in Chapter 3.

If you encountered an installation problem, see the next section on troubleshooting.

Troubleshooting the connection

If you receive an error message, if the installation test isn't successful, or if you encounter another problem, go through the questions listed in the following sections. If you cannot solve the problem, see your authorized Apple dealer.

Important Any time that you have difficulty with a printer, turn the printer off and then back on. This action often clears up software-based problems. If you have changed DIP switch settings, you must turn the power off and on so the printer can recognize the new settings.

Nothing happens

This means *nothing*—no printout and no error message. If AppleTalk sent you an error message, see the next section. If not, check these items:

1. Is the ImageWriter LQ turned on? Is it selected? Is the Error light on?
2. Is paper loaded?
3. Are the AppleTalk connectors firmly plugged into both the Macintosh and the ImageWriter LQ?
4. Are all the connections along the network sound?
5. Is the ImageWriter LQ itself functioning properly?

   Run the ImageWriter LQ self-test: turn the printer off, then press the Form Feed button and hold it down while turning the printer back on. Release the Form Feed button after the print head begins to move.

   The ImageWriter LQ should begin a repeated printing of its character set. Turn off the printer again to stop the test. If the printout looks good, the problem isn't with the ImageWriter LQ's printing mechanism.

   ❖ *Note:* The self-test printout gives the status of AppleTalk (either ON or OFF). If the red Error light flashes during the self-test and you're not out of paper, the AppleTalk card is not responding. Check your card installation.

You receive an error message from AppleTalk

The five basic error messages are self-explanatory and point to an immediate solution. These messages refer to the following problems:

- ☐ The ImageWriter LQ is out of paper.
- ☐ The printer is jammed (either a paper jam or a carriage jam).
- ☐ The printer's front cover is off or ajar.
- ☐ The printer is deselected or off-line.

- ☐ The printer is busy.

  You don't have to cancel printing. AppleTalk keeps track of the order in which documents arrive at the printer, and it will print yours as soon as its turn comes around. A dialog box gives you a choice of actions.

A sixth error message tells you that AppleTalk can't find your printer. If you get this message, check these potential problem areas:

- ☐ Select Chooser from the Apple menu. Is the printer the chosen printer?

  If the AppleTalk ImageWriter LQ icon is in the Chooser, but clicking on it results in a "no printer" message, make sure the AppleTalk card is firmly seated. Then check the remainder of the items in this list.

- ☐ Is the printer turned on?
- ☐ Is the printer properly connected to the network?
- ☐ Are all connections firm? Has someone left a cable end dangling?
- ☐ Is there any evidence of cable damage?
- ☐ Is the ImageWriter LQ's SW2-4 DIP switch set to the closed, or down, position? The red Error light flashes irregularly if the AppleTalk card is installed and DIP switch SW2-4 is not in the closed position.
- ☐ Did you cycle the power (turn the printer off and then on again) after changing DIP switch settings?
- ☐ Has the printer been renamed?

Warning Do not run your ImageWriter LQ on an AppleTalk network unless the DIP switch is in the closed position, pointing toward the front of the printer. Running the printer on the network with the switch in the open position could stop the whole network from functioning.

Disconnecting and reconnecting AppleTalk

From time to time, you may want to remove your ImageWriter LQ from the network for service or for printing directly from a computer. This section shows you how to disconnect and reconnect an ImageWriter LQ. It also gives you a four-point checklist to help you determine if you have selected the correct software settings for printing through a network or printing directly from a computer.

Disconnecting from AppleTalk

To disconnect an ImageWriter LQ from an AppleTalk network, follow these four steps:

1. Turn the ImageWriter LQ off.
2. Unplug the AppleTalk connector from the Printer port.
3. If you intend to connect the printer directly to a computer, open the rear cover and the DIP switch cover, and reset DIP switch SW2-4 to the open, or up, position (facing towards the rear of the printer). Close the covers.
4. See the section "Printer Software Settings," later in this chapter.

Reconnecting to AppleTalk

To reconnect an ImageWriter LQ to the AppleTalk network, follow these five steps:

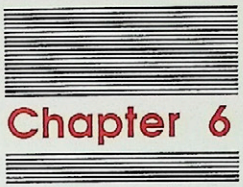
1. Turn the printer off.
2. If the ImageWriter LQ was connected directly to a computer, open the printer and reset DIP switch SW2-4 to the closed, or down, position. Close the printer.
3. Plug the AppleTalk connector into the Printer port.
4. Turn the ImageWriter LQ on.
5. If you were printing directly from a computer before reconnecting, see the next section.

Printer software settings

Whenever you connect an ImageWriter LQ to an AppleTalk network or to a computer, always check these four settings:

- **DIP switch SW2-4.** This switch should be set to closed (down) for a printer on the AppleTalk network or open (up) for printing directly from a computer.
- **AppleTalk connector.** In the Chooser, click AppleTalk Connected or AppleTalk Disconnected as appropriate.
- **Printer port.** The Printer (serial) port must be selected for printing through AppleTalk. If you have the computer connected to AppleTalk and *also* want to connect the computer directly to a printer, you must connect the printer cable to the Modem port and select the Modem port from the Chooser for direct-connect printing.
- **Type of printer.** From the Chooser, select the *type* of printer you want to work with—AppleTalk ImageWriter LQ for printing through the network or just ImageWriter LQ for printing directly from a computer to the printer. If you've chosen an AppleTalk ImageWriter LQ, you'll also need to choose a particular ImageWriter LQ from the printer list.

Important If you are an Apple II user, you must set dip switches SW2-1 and SW2-2 to the closed (on) position (toward the front of the printer) to print directly to the ImageWriter LQ.



Chapter 6

Using the ImageWriter LQ Control Panel

This chapter describes the control panel and explains how to

- use the Select button
- interpret the Error indicator light
- select print quality with the Print Quality button
- use the Line Feed and Form Feed buttons to load, advance, eject, and back out paper

The control panel

The ImageWriter LQ control panel (Figure 6-1) contains the buttons you use to get ready to print, to feed paper, and to select print quality.

The control panel is activated when you turn on the ImageWriter LQ. If the printer isn't on, you won't see any indicator lights on the panel.

❖ *Reminder:* The On/Off switch for the ImageWriter LQ is on the right side of the printer behind the platen knob.

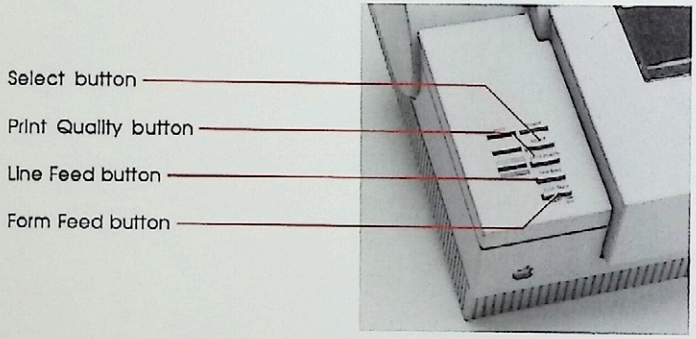


Figure 6-1
The ImageWriter LQ control panel

The Select button

Turning the **Select button** on means the printer is *selected,* or *on-line,* that is, the printer can receive and print data sent from the computer. You'll see the Select light whenever the Select button is on.

Turning the Select button off means the printer is deselected, so you can use the other control panel buttons to select print quality, issue a form feed, or issue a line feed. You won't see the Select light when the Select button is off.

Turn the Select button on to

- print
- clear the Error light after you've corrected the problem that caused it
- temporarily override an out-of-paper error and print a single line with each press of the Select button
- resume printing a self test after you have changed print quality

Turn the Select button off when you want to

- issue a line feed
- issue a form feed
- temporarily stop printing in the middle of a document (the printer will finish printing the current line and a maximum of two additional lines)

The Select button has some other special functions as well. Turn the Select button off and on again when you want to reset the printer and open the paper bail.

When you want to automatically back out pin-feed paper (rear fed, push tractor only) to print on single sheets, turn the Select button off at the same time you press the Form Feed button.

The Select button and the paper sensor

The ImageWriter LQ has a paper sensor that detects whether paper is loaded or not. When you start the ImageWriter LQ with paper loaded, the Select light comes on automatically. When you run out of paper, the Error light comes on and the Select light goes out. The computer then stops sending data, and the printer stops printing. After you add more paper, you can resume printing without losing any text. To resume printing, press the Select button to reselect the printer.

❖ *By the way:* When the Select light goes out because you've nearly run out of paper, you can press the Select button without loading more paper. Each time you press the Select button, one line will print. (If no more lines print, the printer buffer has run out of printable data.) You can squeeze several more lines onto a page, but be careful not to print on a bare platen.

Interpreting the Error light

The Error light next to the Select button can light in three different ways: on (continuous), blinking, or irregular blinking. Each state indicates a different problem.

- **On continuously:** The ImageWriter LQ has run out of paper.

  Load the appropriate paper and press the Select button to continue printing.

  ❖ *A note on preprinted paper:* If preprinted forms have a black band one inch or more in thickness towards the left side of the form, the optical sensor in the printer may read the band as no paper. If the Error light goes on in this situation, simply press the Select button to continue printing.

- **Blinking on and off:** Look for either of two causes.

  The front cover may be loose or off. Correctly seat it and press the Select button to continue.

  If the front cover is not the cause, check for paper or print mechanism jams.

- **Blinking irregularly:** DIP switch SW2-4 should be set to the open, or back, position, unless you have the ImageWriter LQ AppleTalk Option card installed.

The DIP switch cover is on the left rear of the ImageWriter LQ under the rear cover. Use the finger notch to lift the cover up. Then check the switch. With a pen or screwdriver, flip switch 4 on block SW2 (the block in the middle) if you need to: closed, or pointing towards the front of the printer, if you have the ImageWriter LQ AppleTalk Option installed; open, or pointing towards the back of the printer, without the ImageWriter LQ AppleTalk Option card installed. See Appendix C for details on DIP switch settings.

The Print Quality button

The Print Quality button lets you select three different levels of print quality—Draft Quality, Near Letter Quality, and Letter Quality—for Apple II computers. Whether the printer uses a fixed- or proportional-pitch font depends on how DIP switches SW1-6 and SW1-7 are set.

Important Software selections, from menus or dialog boxes, almost always override a Print Quality button selection.

The ImageWriter LQ has three levels of print quality.

- **Draft Quality:** high speed (250 characters per second, fixed pitch) for printing the least dense characters. Choose Draft Quality when you want a quick copy of your document for reviewing or editing. The fixed-pitch Draft Quality is a 10-point, 12-pitch Courier font. The proportional-pitch Draft Quality is a Courier font; it prints at 145 characters per second.
- **Near Letter Quality (NLQ):** (90 characters per second, fixed pitch) for printing medium density characters. Choose Near Letter Quality when you want reasonable output quality at higher speeds. The fixed-pitch Near Letter Quality is a 10-point, 12-pitch Courier font. The proportional-pitch Near Letter Quality is a Courier font; it prints at 145 characters per second.
- **Letter Quality (LQ):** (115 characters per second, proportional pitch) for printing a proportional, high density font for presentations and formal communications. The proportional-pitch Letter Quality is a Times font. There is no fixed-pitch Letter Quality. (If you are using fixed pitch and you select Letter Quality with the control panel button, the printer will automatically default to the NLQ fixed-pitch font.)

❖ *Note:* Proportional-pitch printing speeds are determined using **Shannon text,** a standard test pattern.

Examples of the print density and character spacing (pitch) in the three print qualities are shown in Figure 6-2.

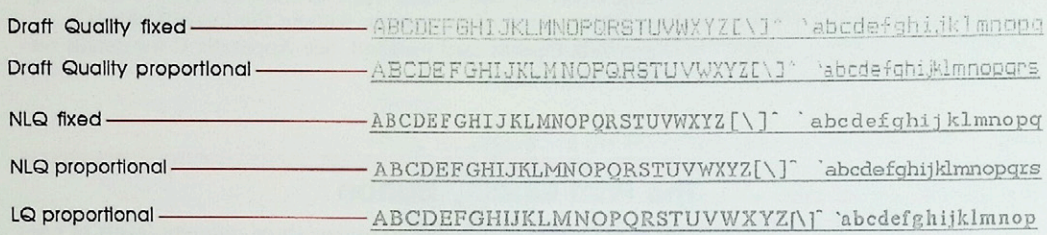


Figure 6-2
Print quality examples of built-in fonts

Selecting print quality with the button

Use the Print Quality button when you cannot choose print quality from software dialog boxes or menus.

By pressing the Print Quality button repeatedly, you can "walk" through the three settings. Successive presses take you from Draft Quality to NLQ to LQ.

Make sure that the Select light is off before choosing a print quality. (The Print Quality button won't function if the printer is selected. If the Select light is on, press the Select button to turn it off.)

Figure 6-3 shows the print quality selection lights.

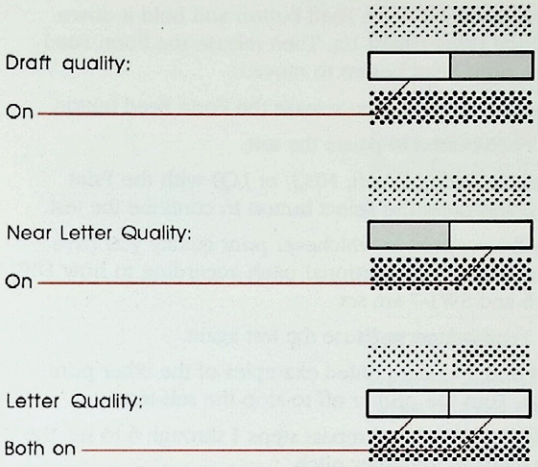


Figure 6-3
Print quality selection lights

When only the left light is on, you get Draft Quality. When the right light is on, you get NLQ. With both lights on you get LQ.

- *Macintosh users:* When you choose Best or Faster Quality from the Print command dialog box, those selections override the print quality setting indicated on the printer; when you select Draft Quality, the ImageWriter LQ uses its built-in draft fonts. You must install both 1X and 3X fonts in your System file to produce the highest quality printing. See "Working With Macintosh Fonts for the ImageWriter LQ" in Chapter 3 for more information.
- *Apple II users:* See Appendix E and the *ImageWriter LQ Reference* manual if you need to add command sequences for controlling font size (characters per inch) to your application.

Printing examples

You can print examples of each print quality using the Print Quality button while you are running the printer self-test. With DIP switches SW1-6 and SW1-7 closed, you produce the three print qualities in proportional pitch; with DIP switches SW1-6 and SW1-7 open, you produce two print qualities in fixed pitch. Here's how to print examples of each print quality:

1. Turn Select off, then turn the printer off.

2. To start the test, press the Form Feed button and hold it down while you turn the printer back on. Then release the Form Feed button after the print head begins to move.

   The self-test will begin when you release the Form Feed button.

3. Press the Line Feed button to pause the test.
4. Choose a different setting (Draft, NLQ, or LQ) with the Print Quality button, and press the Select button to continue the test.

   The self-test will now print in whichever print quality you have chosen, and in fixed or proportional pitch according to how DIP switches SW1-6 and SW1-7 are set.

5. Press the Line Feed button to pause the test again.
6. Repeat steps 4 and 5 to see printed examples of the other print quality settings. Turn the printer off to stop the self-test.
7. Change SW1-6 and SW1-7 and repeat steps 1 through 6 to see the three print qualities in the other pitch.
8. Return SW1-6 and SW1-7 to their original positions when you are finished with the test.

❖ *DIP switch note:* See Table C-2 for a complete list of printer DIP switch settings.

The Line Feed button

Use the Line Feed button to advance paper one line at a time. The Line Feed button won't function if the printer is selected (if the Select light is on).

- Press and release the Line Feed button to advance the paper by one line.
- Press and hold down the Line Feed button to perform repeated (up to four) **line feeds,** with a pause between each, followed by a **form feed.** (At the fifth Line Feed button press, the printer automatically performs a form feed.)

❖ *Note:* You can throw off the line count set in your application by advancing paper independently of the software. See "Working With Margins and Print Alignment" in Chapter 7.

The Form Feed button

Use the Form Feed button to perform a form feed, load and eject paper, back out pin-feed paper so that you can print on a single sheet, and perform the printer self-test. The Form Feed button won't function if the printer is selected (if the Select light is on).

The sections that follow describe the Form Feed button's five related functions.

Form feed

Press the Form Feed button to advance a whole sheet of pin-feed paper. A form feed normally positions the top paper edge (or perforation) with the top-of-form line on the plastic paper guide. Printing begins approximately ⅛ inch below the paper edge, at the base of print line, unless your top margin is set at different location. (See Figure 6-4.) The Form Feed button feeds in a new form, or page, with each press.

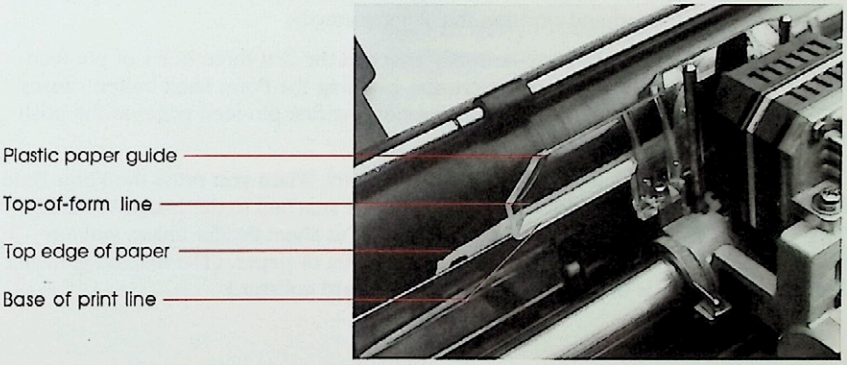


Figure 6-4
Form Feed paper alignment

Paper advancement with the Form Feed button is dependent on pinch rollers in the printer. The normal variance is approximately ½ line above or below the print line. If the Form Feed button loads your paper further away from the print line than this, your printer may need adjustment.

- *DIP switch note:* Paper alignment with Form Feed is controlled by DIP switch SW2-8. Unless you are using the push tractor, you won't generally change this setting. When SW2-8 is off (the default position), a form feed advances paper to the top-of-form line on the paper guide. When SW2-8 is changed to on, a form feed advances paper 1⅛ inch above the print line for last form tear-off. See "Changing Settings With DIP Switches" in Appendix E if you want to change DIP switch SW2-8.

Paper load

Press the Form Feed button to load and position paper automatically. Printing begins at the base of the print line.

When you have inserted a single sheet of paper so its top edge rests against the platen, pressing the Form Feed button causes the printer to load and position the sheet correctly.

When you have correctly attached the first three holes of pin-feed paper to the tractor clamps, pressing the Form Feed button causes the printer to load and position the first pin-feed page on the push tractor correctly.

- *A note for Cut Sheet Feeder users:* When you press the Form Feed button with a Cut Sheet Feeder attached to the ImageWriter LQ, the printer will load from the Cut Sheet Feeder unless you are manually inserting a single sheet of paper. (The manual feed slot is between bin 1 and the forward collator.)

Paper eject

Press the Form Feed button to eject or push out the current page when a print job finishes in mid-page. If you're using pin-feed paper, the printer advances the top edge of the paper to ⅙ inch above the print line (with DIP switch SW2-8 off) or to 1⅙ inch above the print line (with DIP switch SW2-8 on).

❖ *Note:* You can throw off the line count set in your application by advancing or loading paper independently of the software. See "Working With Margins and Print Alignment" in Chapter 7.

Paper back out

When the Select light is on, press the Form Feed and Select buttons at the same time to back out the first page of pin-feed paper loaded from the rear onto the push tractor.

This feature lets you print on a single sheet without having to remove the pin-feed paper. Paper back-out backs the pin-feed paper up to the correct loading position, with the first three pin holes attached to the tractors, so it will be easy to reload.

❖ *Note:* Don't try to use the back-out feature with thick forms, or you'll have paper jamming problems.

Self-test

Turn the power on with the Form Feed button depressed to start the self-test. To run the self-test across a 15-inch pin-feed page, press and hold the Form Feed and Line Feed buttons while you turn the printer back on; then release the two buttons after the print head begins to move.

Chapter 7

Working With Paper

This chapter explains how to work with various kinds of paper with the ImageWriter LQ. Topics include

- paper placement
- paper feeding choices and printer settings
- push and pull tractors
- adjusting for paper thickness
- removing the last printed pin-feed page
- working with margins

❖ *Paper loading:* See Chapter 2 for step-by-step instructions on loading pin-feed paper with the push tractor, pin-feed paper with the pull tractor, and single sheets. See Appendix A for Cut Sheet Feeder installation instructions.

Paper placement

Any tractor-feed paper you use, whether it's sheets, labels, forms, or envelopes, must be able to feed into and out of the printer without running into obstacles. Obstacles can cause the paper to pull out of the tractors or tear. Here are some hints for paper placement to help you and your paper avoid such obstacles:

- Align a box or stack of pin-feed paper with the printer tractors so that there's no sideways pull as the paper feeds.
- Place paper so it can be pulled straight up into the tractors, or be fed on a level with them, rather than having to feed up and over the edge of a box and back down into the printer.
- Make sure that there are no cords or other obstacles between the paper and the printer.
- If possible, let paper feeding out of the printer flow down so that you won't have bunching problems.
- When you are using the bottom paper-feed slot, place the paper directly under the slot so it can feed up without any pull. Use the bottom feed icons to align the printer directly over the slot in your table or stand.

❖ *Note:* Use the bottom paper-feed slot for labels and multipart forms. Be sure to adjust for form thickness and use the pull tractor with the bottom feed slot.

Paper feeding choices and printer settings

The ImageWriter LQ features that let you print on many varieties of paper also require that you change certain settings to conform to the kind of paper that you are using.

❖ *Note:* If you always print on the same kind of paper, you need only change the settings once.

This section describes the choices and settings to check. Installation details are in Chapter 2. Figure 7-1 demonstrates paper-feed paths; Table 7-1 lists the paper feeding options you have.

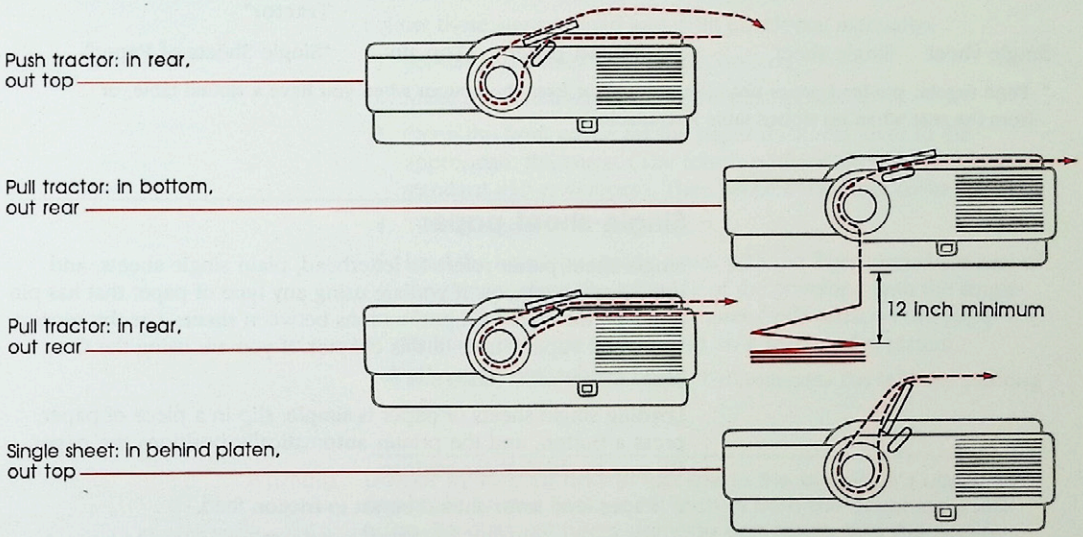

Push tractor: in rear, out top
Pull tractor: in bottom, out rear
Pull tractor: in rear, out rear
12 inch minimum
Single sheet: in behind platen, out top

Figure 7-1
ImageWriter LQ paper-feed paths

Important Some software applications use reverse line feeds in order to print properly. If your application does this, you must use the push tractor or single-sheet feeding. The pull tractor and the Cut Sheet Feeder do not allow for reverse line feeds.

Table 7-1
ImageWriter LQ paper-feeding options

Method	Paper you use	Feed in	Feed out	Section in Chapter 2 to see
Push tractor	Pin-feed regular	Rear	Top slot	"Pin-Feed Paper With Push Tractor"
Pull tractor	Pin-feed regular	Bottom*	Rear	"Pin-Feed Paper With Pull Tractor"
Pull tractor	Pin-feed regular	Rear*	Rear	"Pin-Feed Paper With Pull Tractor"
Pull tractor	Pin-feed forms, labels	Bottom	Rear	"Pin-Feed Paper With Pull Tractor"
Single sheet	Single sheet	Behind platen	Top slot	"Single Sheets of Paper"

* Feed regular pin-feed paper onto the pull tractor from the bottom when you have a slotted table, or from the rear when no slotted table is available.

Single-sheet paper

Single-sheet paper refers to letterhead, plain single sheets, and individual envelopes. If you are using any type of paper that has pin holes on the sides and perforations between sheets, see the section "Pin-Feed Paper," later in this chapter. If you are using the Cut Sheet Feeder, see Appendix A.

Loading single sheets of paper is simple: slip in a piece of paper, press a button, and the printer automatically positions the paper. Be sure to check these settings:

- ☐ Paper-feed lever should be set to friction feed.
- ☐ Single-sheet guide should be upright. Tractors should be in the push position.
- ☐ Left side of paper should be aligned with the single-sheet icon on the single-sheet guide.
- ☐ If paper is thicker than 24-pound bond, the paper thickness lever probably needs to be adjusted.

❖ *A note on paper weight:* The ImageWriter LQ works best with 16- to 24-pound bond. Although we don't recommend it, if you must work with lighter papers (like onionskin), try inserting a backup sheet to provide enough thickness for the friction-feed mechanism.

Warning Do not use paper with staples or paper clips in your ImageWriter LQ.

Envelopes

It is possible to load envelopes manually. The process is similar to loading single sheets.

❖ *Note:* The envelope attachment to the Cut Sheet Feeder provides automatic envelope loading; it is the best way to print on envelopes with the ImageWriter LQ. You can also purchase envelopes attached to pin-feed backing for use with tractors.

Follow these steps to load and print envelopes manually:

1. Set the paper-feed lever to friction feed.
2. Make sure the tractors are in the push position.
3. Open the front cover; set the paper thickness lever to the appropriate thickness. (The fourth position should work best for standard #10 envelopes). Then replace the front cover.
4. Tilt the single-sheet guide up.
5. Load the envelope upside down with the front toward the rear of the printer. Align the left edge of the envelope with the single-sheet alignment icon and the outer (red) mark on the paper bail, and push the envelope in till it reaches the platen.

   The black mark on the paper bail indicates the leftmost printing edge.

Warning Do not try to print on the top line in the envelope's upper left corner, or on the first quarter inch in from the envelope's left edge. Serious print head damage can result, and the paper feed mechanism may jam. Printing one line down from the top, and in line with the black mark on the bail is fine, and causes no problems.

6. Press the Form Feed button to bring the envelope up to the top line on the paper guide.
7. Press the Line Feed button to move the envelope until the print line on the paper guide is at the correct position.

8. Press the Select button.
9. Issue your software's print command.
10. If necessary, turn the platen knob to eject the envelope from the printer when printing stops.
11. When you are finished with envelopes, press gently on both sides of the single-sheet guide to return it to its normal position.
12. Be sure to reset the paper thickness lever and, if necessary, the paper-feed lever before returning to normal printing.

Using single sheets with pin-feed paper loaded from the rear

If you want to print on single sheets without removing pin-feed paper loaded from the rear onto the push tractor, use the paper backout method described here.

1. Make sure that the Select light is on.
2. Press the Select and Form Feed buttons at the same time.

   This backs up the pin-feed paper to the first three tractor holes.
3. Push the paper-feed lever back for friction feed.

   When you return to pin-feed paper use, be sure to push the paper-feed lever forward again.

Important Use this method only with pin-feed paper loaded from the rear onto the push tractor

Pin-feed paper

Pin-feed paper refers to any paper with pin holes on the sides and perforations between sheets. Pin-feed paper can be perforated sheets, envelopes, labels, or forms. If you are using single sheets, see the earlier section "Single-Sheet Paper."

When you load pin-feed paper, you adjust the tractors to accommodate your paper, set the printer to pin feed instead of friction feed, and feed the paper in automatically. Here are the settings to check:

- ☐ Paper-feed lever should be set to pin feed.
- ☐ Push or pull tractor setting should be chosen according to type of pin-feed paper. See Table 7-1.
- ☐ Left side of paper should be aligned with the pin-feed alignment icon on the printer housing. The left perforation line on the paper should be aligned with the red mark on the paper bail.
- ☐ If paper width is different from that which you normally use, the right tractor width should be adjusted.
- ☐ If paper is outside the 16- to 24-pound bond range (as envelopes and multipart forms generally are), the paper thickness lever should be adjusted and you should be using the bottom paper feed slot.
- ☐ DIP switch SW2-8 should be changed to the on position if you want to use last page tear-off with the push tractor .

For detailed instructions and photographs, see the sections "Pin-Feed Paper With Pull Tractor" and "Pin-Feed Paper With Push Tractor" in Chapter 2.

❖ *Note:* You cannot use pin-feed paper when the ImageWriter LQ Cut Sheet Feeder is in place.

About push and pull tractors

The ImageWriter LQ has two tractor settings—push and pull—for pin-feed paper.

The push tractor "pushes" pin-feed paper under the platen when the paper is fed into the rear of the printer. Use the push tractor with rear feed in these situations:

- ☐ You want to tear off the printed sheet without advancing the paper forward a full page. This saves paper, as you don't have to advance a blank sheet prior to tearing off the last page of the print job. Be sure to change DIP switch SW2-8 to the on position so the top perforation will automatically advance to just beyond the paper bail.
- ☐ You have a software application that reverses the paper feed direction when printing.

- You don't have a printer table with a paper-feed slot for bottom paper feeding.

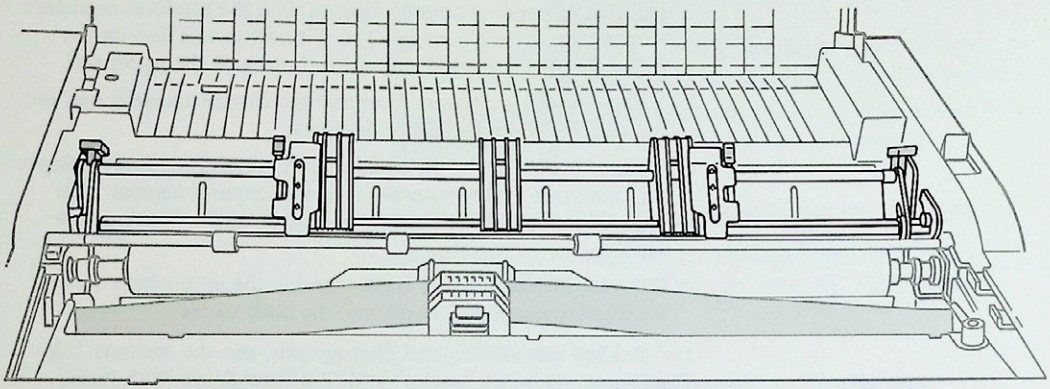


Figure 7-2
Push tractor position

The pull tractor "pulls" paper into the printer. (See Figure 7-3.) Use the pull tractor for

- pin-feed labels, envelopes, and thick multipart forms fed from the bottom
- regular pin-feed paper fed from the bottom (through a slotted printer table or stand) or from the rear of the printer
- slightly quieter operation than with the push tractor

Important Applications that reverse the paper feed while printing will not work properly in the pull mode.

The straight paper path helps prevent jams and labels from being pulled from their backing, and gives the best print alignment on the page.

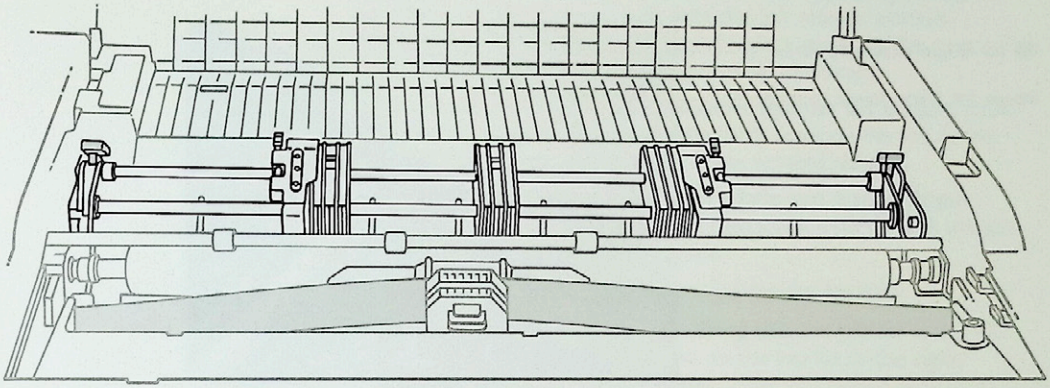


Figure 7-3
Pull tractor position

Adjusting the paper thickness lever

In its standard (back or up) position, the paper thickness lever prints best on paper that's 16- to 24-pound bond. There are four other numbered settings on the lever. (See Figure 7-4.) Each position represents 3/1000 inch in additional thickness, with the most forward (downward) position for the thickest paper.

Whenever you are using paper or envelopes that are thicker than normal, or when the print isn't crisp, adjust the paper thickness lever. Follow these steps to set the lever:

1. Open the front cover and find the blue paper thickness lever on the left side of the printer, between the platen and the ribbon cartridge.

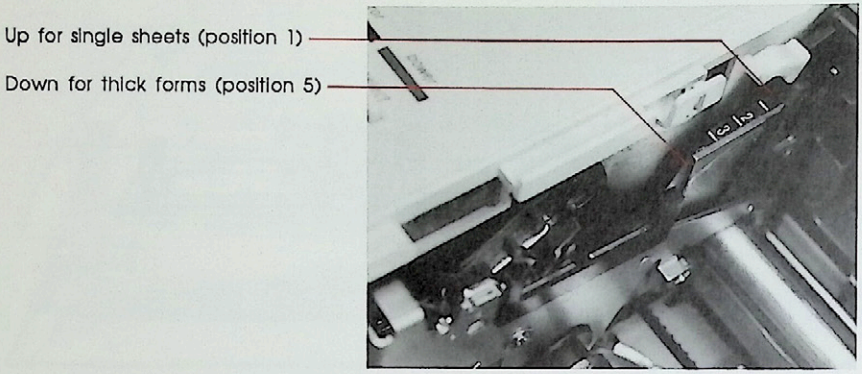


Figure 7-4
Paper thickness lever

2. Pull the lever forward, towards the front of the printer, to set for thicker paper. Because of thickness variations in paper and multipart forms, you may need to experiment with a couple of different settings.

   Try the third setting for three-part forms, the fourth setting for envelopes and mailing labels, and the fifth (lowest) setting for thick multipart forms.

3. Click the lever to the appropriate setting.

Warning Never use a form, label, or envelope that is thicker than four sheets of 16-pound bond. Too much paper may cause lines to register incorrectly or may jam the printer.

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4. After adjusting the paper thickness lever, close the front cover. If the cover is open or not properly seated, the ImageWriter LQ will not print.

   ❖ *Note:* Be sure to reset paper thickness before reloading regular paper.

Adjusting tractors for correct left-margin printing

When working with pin-feed forms or labels, you may need to adjust the tractors so that the point where you want to begin printing on your form or label corresponds with the left margin actually delivered by the program. The vertical black mark on the paper bail indicates the position of the first printable character.

1. To determine where your application sets the left margin, print your form or a few labels. Use the black mark on the left of the paper bail to help you align the form or label sheet.
2. Set the left tractor so that the point where you want to begin printing on your form or label corresponds with the left margin actually delivered by the program.

   See Chapter 2 for details about adjusting the tractors.

   If the Error light comes on, signifying that the printer is out of paper, you may have set the left tractor too far to the right. Readjust the tractor and try again.

Important Don't try to set the left margin beyond the vertical red mark on the paper bail. The red mark represents the print head's absolute boundary.

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3. With the left tractor set, use your form or label sheet to set the appropriate position for the right tractor.

Warning When using labels, do not turn the platen knob counter-clockwise. This could cause a label to come off in the printer, possibly causing damage.

❖ *By the way:* When you have finished your form or label printing, you may want to make a note on your sample printout page of the settings you used for future reference.

Removing the last pin-feed page

When a pin-feed print job ends, the last page remains in the printer. Use any of these ways to tear off the last page:

□ When using the push tractor, set DIP switch SW2-8 to on and simply tear off the last page of the document without wasting a sheet.

- When using the pull tractor, leave the last page in the printer, and remove it after you've printed another document. If you need that last page immediately, press the Form Feed button to eject it.
- Eject the last page by making sure that the Select light is out and the power is on, then pressing the Form Feed button once to eject the current page.
- Experiment with setting the top of form in your application. See the section "What Setting the Top of Form Does," later in the chapter.

Working with margins and print alignment

The ImageWriter LQ is designed so you can automatically load both single-sheet and pin-feed paper. When you use the Form Feed button to load paper automatically, the printer does several things:

- It rolls the paper under the platen and the plastic paper guide.
- It lifts the paper bail.
- It stops the form feed when the paper reaches the top-of-form line, ⅛ inch above the print line on the paper guide.

When the paper moves four to five lines past the paper bail during printing, the bail is automatically lowered so it holds the paper in place.

The paper guide has two lines to help you with print alignment:

- The bottom line indicates the base of the print line. Use it as a guide for print alignment on pre-printed forms, and when you are setting your own top of form.
- The top line on the paper guide is ⅛ inch above the print line; when DIP SW2-8 is set to the off (open) position, a form feed positions the top edge of the paper at this line. When DIP SW2-8 is set to the on (closed) position, a form feed ignores this line and positions the top edge of the paper 1⅛ inch above the print line on the paper guide.

What software does

Generally the software you use lets you set top, bottom, and side margins for each document.

The way that you set margins varies from application to application. Some applications let you set margin sizes so that no matter what character and font size you use in a document, the margins remain consistent. Other applications let you set a page length: the program keeps track of the number of lines it has printed on the page; when the count reaches the maximum number of lines, the program issues a form feed and the paper advances to the top of the next page. Because of the variations, you'll have to experiment with your software; once you know what its rules are, you can use them to fit your margin needs.

❖ *Note:* Some applications (like MacWrite) have built-in margin minimums that you must take into account when setting your own margins.

Important Be sure to reselect ImageWriter LQ in the Chooser and verify Page Setup each time you print a document on a different type of printer. Margins and page sizing are different in the ImageWriter and LaserWriter, for example, so document formatting changes. Checking the Chooser and Page Setup ensures that your document will appear as you want it to.

You can throw off the line count by advancing or loading paper independently of the software. For example, if you cause printing to pause and then advance the paper (either manually or by pressing the Line Feed button), the software won't register that you've set a new paper position. The result is that the next page break will occur somewhere in the middle of the page instead of at the end of a page.

Warning Don't print within 1/4 inch of any of the four corners of a sheet of paper or envelope. Printing too close to a corner can tear the corner, jam the printer, and damage the print head or paper guide.

What setting the top of form does

The term **top of form** describes where the printer will print its first line on a page. With the ImageWriter LQ, the top of form is the position of the print line *relative* to the top edge of the paper when you turn on the printer. Thus, if the print line rests ⅛ inch below the top edge of the paper, that is the top of form.

The ImageWriter LQ automatically loads paper so the print line is ⅙ inch below the top edge of the paper. You can change the default top of form in two ways:

- By changing DIP switch SW2-8 to the on (closed) position, you can tell the printer to automatically load paper so the print line is 1⅙ inch below the top edge of the paper. You can use this method with all paper that loads automatically—with single-sheet paper, envelopes, and pin-feed paper loaded on the push tractor. See "Changing Settings With DIP Switches " in Appendix E.
- You can temporarily reset the top of form manually. The printer "remembers" a manually set top-of-form position until you turn the printer off.

Follow these steps to reset the top of form manually:

1. Turn the platen knob clockwise to advance the paper to the desired top-of-form position.
2. Press the Form Feed button to load the next sheet.

   The printer uses the temporary top-of-form position until you turn it off, then defaults to the DIP switch SW2-8 setting.

❖ *Pull tractor note:* The top of form is established when you manually load paper on the pull tractor. You can't use automatic form feed with the pull tractor.

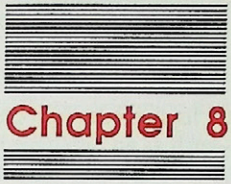
Loading paper manually

Turn the platen knob clockwise to load paper manually. Printing begins at the print line on the paper guide, so align your paper accordingly. The printer advances the paper 66 lines (a full page) from the print line with each form feed, and remembers the top-of-form position until you turn the printer off.

❖ *Note:* If heavy stock gets stuck during a form feed (automatic load), load it manually to avoid jamming problems.

Aligning preprinted forms

Use the print line on the paper guide to position preprinted forms for correct printing.



Chapter 8

Troubleshooting

This chapter lists common problems and suggests solutions. Many problems—such as an unplugged power cord or having the Select button in the wrong position—are easy to solve.

If you find that the printer connections are good and the control panel buttons are set correctly for what you are trying to do, you may want to run the printer's self-test to make sure the printer itself is functioning correctly. See the section "The ImageWriter LQ Self-Test" at the end of this chapter. If the self-test is successful, you'll know that the problem is not with the printer. The problem could be

- a poor connection or flaw in the serial interface cable and its connectors
- improperly configured software
- improperly set DIP switches in the printer
- a hardware failure, an improperly set jumper block, or improperly set DIP switches in the interface card (if the serial interface cable connects to one)
- a hardware failure in the computer

Important Proper environment and maintenance can prevent many problems. See Chapter 9 for details on care and maintenance.

The following sections describe problems that you might encounter and provide diagnostic instructions and possible solutions.

Printer won't go on

Check these potential problem sources:

- Is the power cord plugged in? Check the power cord connection to the printer and to its power outlet.
- If you're using a power strip, is it plugged in? Is it turned on?
- Is power available to the power outlet? You may want to try plugging something else into it, like a radio or lamp. If the appliance doesn't work, the problem probably lies somewhere in your electrical system. Is the outlet controlled by a wall switch? Is the problem a blown fuse or tripped circuit breaker?

- ☐ If you determine that the printer is properly plugged in and turned on and that power is available to its outlet (the test appliance works), the problem may be a blown fuse in the printer. Take the printer to your authorized Apple dealer for fuse replacement. (The fuse is internal and should be replaced only by an authorized Apple dealer.)

Warning Never replace a fuse with a wire or with a fuse that has a higher rating. Fuses are in your system to prevent fires and damage to your equipment. Always look for the cause of a blown fuse before continuing to use your equipment.

Printer won't print

Several things can cause this problem:

- ☐ Is the ImageWriter LQ Select light on? You must *select* the printer, or it cannot receive data from the computer.
- ☐ Is the ribbon properly installed? Is it jammed?
- ☐ Are you using the correct serial interface cable?
- ☐ Is the interface cable plugged into the correct socket? If you have the cable in the Modem port, make sure that you select that port with the Chooser (Macintosh) or Control Panel (Apple IIGS) desk accessory.
- ☐ Is the printer correctly connected to the AppleTalk network? Are you using the correct AppleTalk cable?
- ☐ If you are using a Macintosh computer, check the Chooser accessory to make sure that you've selected the correct printer and port, and AppleTalk active or inactive as appropriate. If you don't see the LQ ImageWriter icon, you haven't installed resources properly.
- ☐ If you are using an Apple IIGS, check the Control Panel program to make sure that you've selected the correct printer and port or slot.
- ☐ If you are using an Apple IIe or Apple IIGS with a serial interface card, is the jumper block set to TERMINAL?

- Are the data transmission rates between the printer and the software or between the printer and interface card correctly matched? (See the section "Mismatched Data Transmission Rates," later in this chapter.)

Warning Never adjust or change a cable, an interface card, or a DIP switch when the computer is on.

Error light is on

The red Error light's three states indicate three problem areas:

- The Error light is on continuously.

  You are out of paper or paper hasn't been fed under the platen yet. Load a fresh supply of paper and press the Select button to print.

- The Error light is blinking.

  The Error light may be blinking because the front cover is open or loose, or because something has jammed the print mechanism.

  Correctly seat the front cover and press the Select button to continue.

  If the front cover is not the cause, check to see if anything has jammed the print mechanism.

- The Error light is blinking irregularly.

  When the Error light blinks irregularly, take a look at DIP switch SW2-4. The DIP switches are at the left rear of the printer. If you don't have an AppleTalk Option card installed, switch SW2-4 should be set to open. If you have the AppleTalk Option card installed, the switch should be set to closed. See "Setting the DIP Switch" in Chapter 5.

You get a printout, but nothing like you expected

Unexpected output, like odd spacing or garbled characters, is usually a result of mismatched settings between the printer and the software or between the printer and interface card settings. These mismatches can stem from

- a loose cable
- incorrect configuring of an application program's settings
- incorrect DIP switch settings on the ImageWriter LQ or on a serial interface card

When diagnosing a problem, check for a loose cable fit and software problems before checking the DIP switches.

Incorrect software configuration

Software problems happen when a program's settings are not the same as the printer's. The process of changing software settings is called configuring.

If you suspect a configuration problem, read the material on configuration in your application program manual and check it against the standard settings for the ImageWriter LQ in Appendixes C and E. If you find a discrepancy, reconfigure the program to match the printer's specifications.

If you get a one-line printout as soon as you connect the printer and the computer, you may have a mismatched data transmission rate. See the section "Mismatched Data Transmission Rates" in this chapter.

If the printout is composed of random characters (garbage), and you are using a Macintosh, check the Chooser. If you are trying to print directly and AppleTalk is connected, or you're trying to use AppleTalk but another printer resource is chosen, you may get printed garbage. Reselect the printer and try again.

You might also try printing something from a different program—one you know works. If it works and the problem program doesn't, you probably need to reconfigure the problem software.

Incorrect DIP switch settings

Mismatched DIP switch settings can cause the same problems as misconfigured software. The switch settings program the printer or interface card to do certain things, like send data at a given data transmission rate, for example 9600 or 19,200 baud.

The ImageWriter LQ has three DIP switch blocks. Serial interface cards have their own DIP switch blocks; if you're using an Apple IIe or Apple IIGS, you may need to check the DIP switches on the card.

Important See Table C-2 for a complete listing of what effect DIP switch settings have, and "Changing Settings With DIP Switches" in Appendix E on how to change them.

Missing, jumbled, or random characters

These problems are caused by mismatched baud or mismatched data byte information (including data byte length, parity, stop bit, and start bit settings).

Mismatched data transmission rates

When the data transmission rate settings between devices are different, the printer can produce a garbled printout. The ImageWriter LQ is set to 19,200 baud at the factory.

Switches SW2-1 and SW2-2 should be in the open, or up, position for 19,200 baud. If you own a Macintosh or Apple IIc and are having a data transmission rate problem, check these switches. If you have an Apple IIGS, check the Printer port setting in the Control Panel program: the Apple IIGS can use 19,200, but the default setting is 9600. If you have an Apple IIe, make sure that your serial card is set to 9600 baud and the printer DIP switches SW2-1 and SW2-2 are closed. Check your interface card manual for data transmission rate details.

Warning Never adjust switches or work with an interface card when the computer is on. You could harm the computer and the interface card.

Mismatched data bytes

Data byte mismatches can occur through improper software and serial interface card settings. Data byte mismatches include

- **data byte length**
- **start bit**
- **stop bit**
- **parity** setting

The ImageWriter LQ is *permanently* set for an eight-bit data byte with one start bit, one stop bit, and no parity. Check your software settings for these categories. If you have an interface card, check its settings.

Intermittently dropped or random characters

Mismatched communications protocols or a hardware failure (like a flawed connector or cable) can cause intermittent problems.

Communications protocols tell a computer when to send data and when to pause. A protocol mismatch can cause intermittent loss of characters or intermittent garbage. The ImageWriter LQ is factory-set for the **hardware handshake** (also known as **Data Terminal Ready,** or DTR) protocol. DIP switch SW2-3 should be set to Open. When this switch is closed, the printer uses the **XON/XOFF** protocol.

Check the protocol settings for your software and for your interface card, if you have one.

Spacing problems

Did the printout show the entire document printing on one line? Did the printer double- or triple-space when you wanted single spacing? The problem is probably line feed. A line-feed character causes the printer to advance the paper one line every time your software sends a carriage return (meaning the end of a line).

❖ *Note:* If you get a one-line printout as soon as you connect the printer and the computer, you may have a mismatched data transmission rate. See the section "Mismatched Data Transmission Rates."

If the whole document printed on one line, it means that paper is jammed, or no line feed character was sent to advance the paper, or the application uses reverse line feeds and your paper feed mode doesn't allow it (pull tractor or using the Cut Sheet Feeder). Any of four entities can issue line feeds: the printer, the software, the printer's serial port, and the interface card (if you have one). If you want single-spaced documents as your standard, you must set *one and only one* of these entities to add a line feed after a carriage return.

The ImageWriter LQ's factory DIP switch setting (SW1-8 open) does not add a line feed after a carriage return. If you need to add a line feed, do one of the following:

- Set your software to send a line feed (on the Apple IIGS, use the Control Panel program).
- Set your serial port to send a line feed (on the Apple IIc).
- Set the interface card to add a line feed (on the Apple IIe).
- Reset DIP switch SW1-8 to the closed position to send a line feed.

If the printout has unwanted double spacing, then the printer is receiving two line feeds for each carriage return. Suppress one line feed as appropriate to your system. If the printout has unwanted triple spacing, suppress line feeds at two points (preferably at the printer and the software).

Document loses top or bottom margins after a few pages

Long documents should print just as well as short ones on the ImageWriter LQ. The printer is factory-set so the maximum line loss over time is two lines. If your document is losing top or bottom margins after a few pages, check the following:

- You may be loading your paper incorrectly; make sure that a form feed aligns the top of the paper ⅛ inch above the print line on the paper guide (or to 1⅛ inch above the print line on the paper guide if you have changed DIP switch SW2-8; or to a different position if you have set your own top of form).
- Check DIP switch SW1-4. The default position (open) sets the page length to 11 inches; the closed position sets page length to 12 inches.
- Check your software margin settings and adjust the top-of-form setting on the printer.

Paper and print quality problems

If characters don't print clearly or if they start to look lighter with each line, check the following:

- ☐ Is your ribbon cartridge correctly mounted?
- ☐ Have you correctly threaded the ribbon between the ribbon guard and print head?
- ☐ Is the paper thickness lever set to the appropriate position? An incorrect setting can cause a poor or light impression, including missing dots.

If single sheets of paper are feeding incorrectly, make sure that you've set the paper-feed lever to friction feed (the rear position). Also, make sure that you are not inserting pages at an angle, and that there are no bits of paper caught in the paper feed path. If you are using the Cut Sheet Feeder and have paper problems, see Appendix A.

If you are having paper-feeding problems, clean your platen. See "Cleaning the Inside of Your ImageWriter LQ" in Chapter 9.

If pin-feed paper is feeding incorrectly, make sure that the paper holes are aligned on the tractors, the tractors are locked, and the paper release lever is set to pin feed. Check the paper feed path to make sure there are no bits of paper caught there, or obstacles, like cords, pressing against the paper. If you are using bottom feed, make sure that the printer opening is aligned directly over the table opening; use the icons under the platen knob to realign the printer.

If labels are feeding incorrectly, make sure that you are using the bottom feed slot.

If you are getting a single squashed line on the page in a consistent place, or the printing is very fuzzy, the ribbon tolerance is probably set incorrectly. See your authorized Apple dealer.

Problems with fonts

If you selected Best quality printing from the Macintosh Print dialog box, but you're not getting the character resolution and quality that you expected from your ImageWriter LQ and Macintosh, make sure that you have loaded the triple size (3X) of the fonts you are using.

You must use the Font/DA Mover version that's on the disks that came with your printer to copy fonts onto your startup disk. If you use an older version of the Font/DA Mover to move fonts, it can confuse the System file and cause software problems. See Chapter 3 for details.

If you know the correct 3X font for the style and size you selected is loaded, but the printout doesn't look right, here are some areas to check.

- Printed images of large fonts aren't crisp.

  Only fonts in sizes 9, 10, 12, 14, 18, and 24, and their 3X equivalents, are on the disks that came with the printer. Fonts larger than 24-point are mathematically derived by the Macintosh.

- Fonts don't look right.

  Always choose Best quality from the Print menu to produce the highest quality output.

Color ribbon problems

On occasion, an unwanted color may show up in a printout. Typically, this can be something like an underscore character appearing in a different color than the text directly above it. Three things can cause this problem:

- The ribbon cartridge is not firmly in position on the ribbon cartridge deck. Press down on the cartridge to make sure that it is secure. If you hear the cartridge click into position, turn the printer off and on again. This may solve the problem.
- The color ribbon is old. Older ribbons tend to bleed colors across color boundaries. Replace the ribbon with a new one.
- The ribbon cartridge itself is not quite properly aligned to the print head. This problem occurs occassionally with individual ribbons. To correct this problem, see your authorized Apple dealer.

The ImageWriter LQ self-test

The self-test only tests the printer, not its communications, cables, connectors, or the computer. (This is the same test you ran after setting up the printer. See Figure 2-38.) Here's how to run the test:

1. Make sure that you have paper loaded and that the Select light is off.

   If the Select light is on, press the Select button to turn the light off.

2. Turn the ImageWriter LQ off by pressing the On/Off switch.

3. To start the test, press the Form Feed button and hold it down while you turn the printer back on; then release the Form Feed button after the print head begins to move. See Figure 2-36.

   The self-test will begin when you release the Form Feed button.

   - *Wide page test:* To run the self-test across a 15-inch pin-feed page, press and hold the Form Feed and Line Feed buttons while you turn the printer back on; then release the two buttons after the print head begins to move.

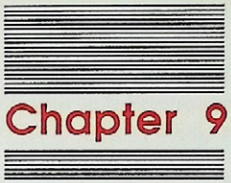
4. To stop the self-test, press the On/Off switch to turn the printer off.

5. To remove the test page, turn the printer on and press the Form Feed button. If you're using pin-feed paper, tear off the page so you can look at it.

If the print is not sufficiently dark, check the paper thickness lever on the left side of the printer. Push it up towards the rear of the printer to move the platen closer to the print head for darker print.

If the density is uneven or the output is smudged, your printer is probably not adjusted correctly. See your authorized Apple dealer.

If the top or bottom edge of a line printed in color contains the next color, your printer is probably not adjusted correctly. See your authorized Apple dealer.



Chapter 9

ImageWriter LQ Care and Maintenance

A good environment plus occasional cleaning will keep your ImageWriter LQ in top working condition for years to come.

Creating an efficient working environment

Here are some points to keep in mind when creating an efficient working environment:

- Keep your ImageWriter LQ out of direct sunlight.
- Place it away from chemical fumes and containers filled with liquids—such as coffee cups, flower vases, and so on.
- The work surface should be sturdy, stable (no card tables, please), and free from vibration. Desks, file cabinets, and printer stands work well.
- Operate the ImageWriter LQ in temperatures from 50° to 104° Fahrenheit (10° to 40° Celsius). You should not attempt to operate it outside this range. You can safely *store* the ImageWriter LQ in more extreme temperatures—from -40° to 116° Fahrenheit (-40° to 47° Celsius).
- Avoid operating your ImageWriter LQ when the relative, noncondensing humidity goes beyond the 20% to 95% range, or storing it where relative, noncondensing humidity exceeds the 10% to 95% range.

If you use pin-feed paper, be sure to position it so that the paper flows easily to the printer, and isn't impeded by power cords or other objects.

Place the printer so that printed pages fall away from the printer. Piled-up pages can cause printer jams or unevenly printed lines.

Warning Avoid using the ImageWriter LQ in a dusty environment or exposing the printer to chemical or solvent fumes (including steam from a coffee maker). Do not set containers filled with liquids—such as cups of coffee—on or near the printer. Do not leave the printer in direct sunlight for long periods of time.

Cleaning the case

Wipe the case with a soft, damp (not *wet*) cloth. To remove stains or dirt, add a drop of liquid detergent to a damp cloth before wiping.

Important Don't clean the case with household cleansers, ammonia, powders, abrasives, or solvents (such as cleaning fluid). Any of these can mar the ImageWriter LQ's finish.

Cleaning the inside of your ImageWriter LQ

It's a good idea to clean the inside of your printer once a month, mainly to remove paper dust and bits of paper. The ImageWriter LQ does not need lubrication thanks to special materials in its print mechanism.

To clean the inside of your ImageWriter LQ, you should have either a soft, clean brush or small can of compressed air. You could also use a clean, lint-free cloth. Here's how to do it:

1. Turn off the printer and open the front cover.
2. Remove the ribbon cartridge.
3. Brush or blow away any dust that may have accumulated.
4. If the carrier rod is dirty, wipe it with a clean, soft, lint-free cloth. Clean up any other dirt you might find.
5. If the platen is dirty, clean it with special pre-wetted platen cleaning pads available from your dealer.

   Keeping the platen clean cuts down on paper-feeding problems.
6. Replace the ribbon cartridge and close the front cover.

You're ready to print again.

Service and support

To help you get the best performance from your system, Apple Computer, Inc. has established a worldwide network of full-support authorized Apple dealers. If you need answers to technical questions or information about product updates, your authorized Apple dealer can help you. Apple's Technical Support organization backs each dealer and international technical support group via AppleLink®, a state-of-the-art on-line electronic information service, to ensure prompt, reliable assistance.

Your dealer has the latest information on new hardware and software products as well as product updates. If you wish to upgrade your system, your dealer can help you select compatible components.

If your product requires service, your local authorized Apple dealer is trained and ready to support you. Apple provides factory-quality parts and the latest available diagnostic equipment to the more than three thousand authorized Apple service centers throughout the world. Apple guarantees parts and warranty labor. (Regulations in each country determine the length of warranty. Some restrictions may apply, depending on the country of original purchase.)

If for some reason you cannot return to the authorized dealer from whom you purchased your system, go to the nearest service location. For the location nearest you, in the United States, call (800) 538-9696; in Canada, call (800) 268-7796 or (800) 268-7637. For locations in other countries, either call the Apple headquarters in your country or write to

Apple Computer, Inc.
Attn: Customer Relations
20525 Mariani Avenue
Cupertino, California 95014
USA

Apple also offers service options designed to meet your needs. One of these is the Apple*Care*® Service Agreement (available in the United States, Canada, and Australia only), which extends full warranty coverage up to three years. Your Apple*Care* contract will be honored at any participating authorized Apple dealer within the country of purchase—an added benefit if you relocate. Local service means time saved in getting your Apple system back to work.

You can purchase Apple*Care* at any time, but it's a good idea to purchase it with your system, or at least before your warranty has expired, to avoid an owner-paid inspection.

Appendixes

Appendix A

Installing the Cut Sheet Feeder on Your ImageWriter LQ

This appendix shows you how to set up your ImageWriter LQ to print with the Apple ImageWriter LQ Cut Sheet Feeder, and how to install all the pieces of the Cut Sheet Feeder.

Important Control of multiple Cut Sheet Feeder bins depends on software applications that take advantage of the printer's ability to use the Cut Sheet Feeder. Be sure to consult your dealer or software supplier for verification of whether your applications let you use multiple bins.

Along with the Cut Sheet Feeder (referred to as bin 1), you may have purchased one or two expansion bins (bins 2 and 3), or an envelope attachment that fits into bin 1. (See Figure A-1.) Be sure to find the connecting instructions that match your configuration.

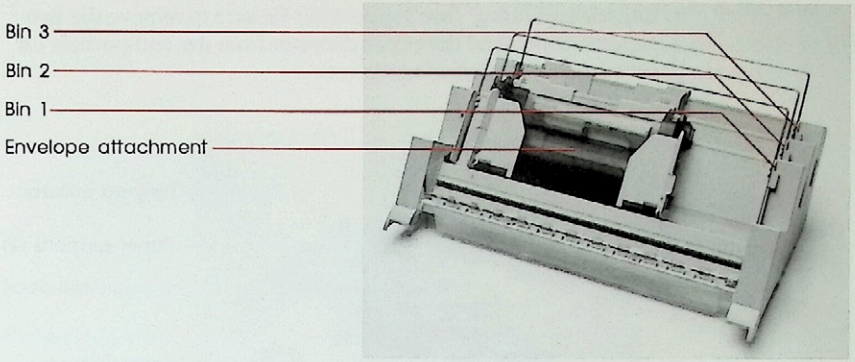


Figure A-1
Fully assembled Cut Sheet Feeder

This appendix assumes that you have already set up and tested your ImageWriter LQ. If you have not done so, see Chapter 2.

Setting up

Setting up the ImageWriter LQ for printing with the Cut Sheet Feeder has three parts:

- opening the Cut Sheet Feeder box
- removing the ImageWriter LQ rear cover and installing the Cut Sheet Feeder paper guide plate
- setting the printer DIP switches for Cut Sheet Feeder use

Opening the Cut Sheet Feeder box

1. Open the box labeled *Apple ImageWriter LQ Cut Sheet Feeder.*

2. Unpack everything. (See Figure A-2.) Be sure to remove the two paper supports and the paper deflector from the end pockets on either side of the large foam piece.

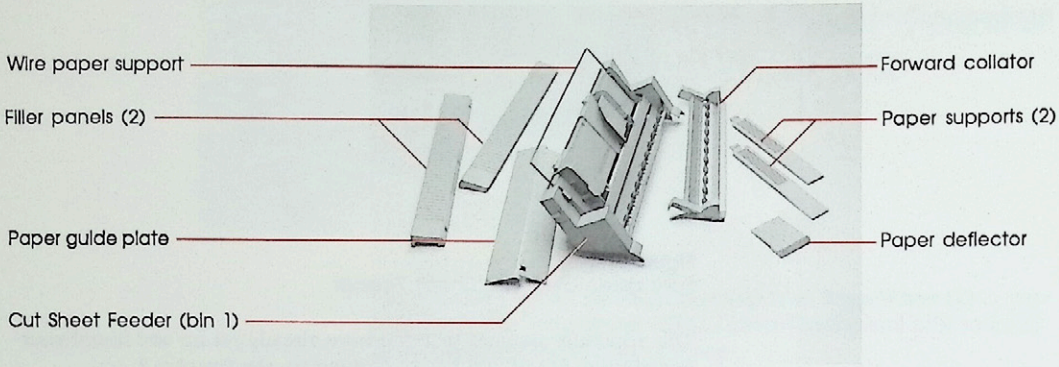


Figure A-2
Cut Sheet Feeder box contents

3. Place the Cut Sheet Feeder and the paper guide plate down on your workspace. Put the other pieces aside for the moment.

Installing the paper guide plate

Here's how to install the paper guide plate:

1. Make sure that the printer is turned off and that the ribbon you want to use is installed.
2. Open the printer's front cover, and remove the rear cover. If the wire paper separator is installed, remove it.

   You'll replace the rear cover with filler panels, and won't use the wire paper separator when the Cut Sheet Feeder is installed.

3. Remove or back out any paper in the printer.
4. Push the paper-feed lever, located behind the platen knob, back for friction feed. See Figure A-3.

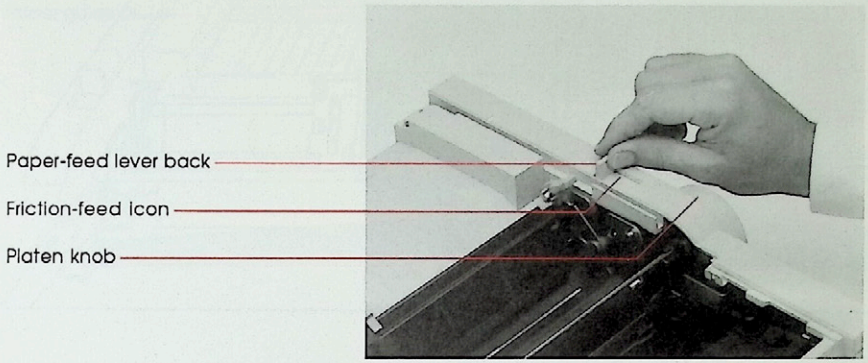


Figure A-3
Paper-feed lever set for friction feed

5. Make sure that the tractors are in the push position. See Figure A-4.

   If you need to adjust the tractors, push the blue tractor levers (the larger ones) back to release them. With your thumbs on the middle of the tractor bar, push it down slightly and towards the back of the printer until it locks in the push position. Close the tractor levers by pulling them forward.

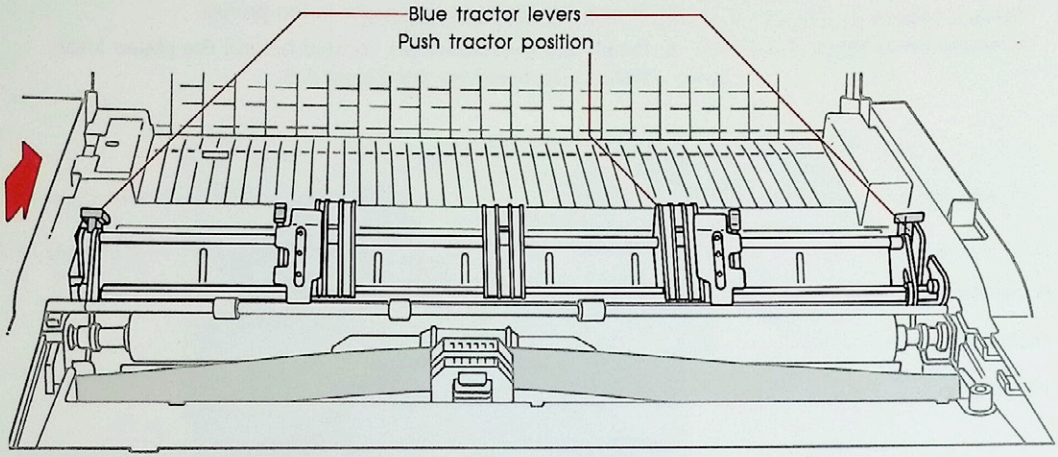


Figure A-4
Using the push tractor

6. Move the tractor paper clamps towards the sides of the printer so they are as wide as possible.

   Push the blue tractor release levers just behind the clamps back to open them. Push the left paper clamp all the way to the left, and the right paper clamp all the way to the right.

   The paper guide plate will go inside the tractor clamps.

7. Flip open both paper clamps on the tractor by lifting them. The clamps should stay in an upright position.

8. Place the paper guide plate—with the square openings and smaller end towards the back of the printer—over the tractor connecting rod and just inside the pinholes on the clamps, not over them. See Figure A-5.

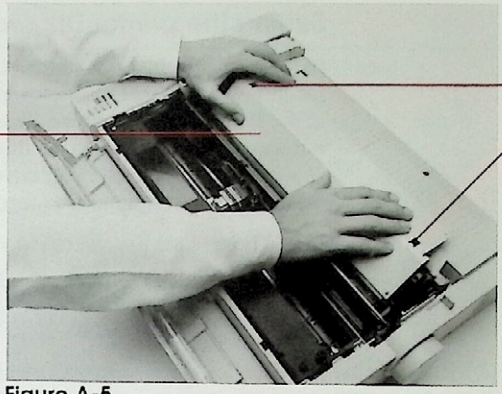


Figure A-5
Positioning the paper guide plate

The paper guide plate fits snugly over the tractor connecting rod. If it is in the wrong position, the paper guide plate will wiggle. If the tractor is not in the push position, the paper guide plate will be loose.

9. Move the tractor clamps in (about ⅛ to ¼ inch) until they hit the tab stops on the back of the paper guide plate.
10. Close the paper clamps over the paper guide plate and lock the tractors by pulling the tractor levers forward. See Figure A-6.

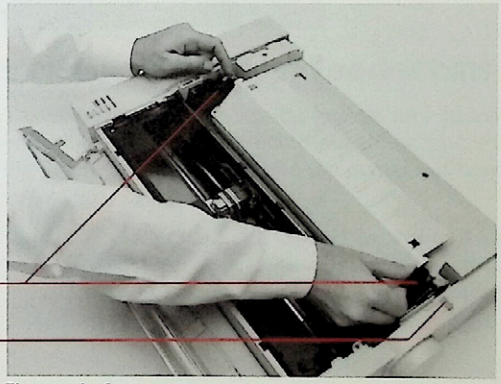


Figure A-6
Paper guide plate installed

Setting the printer DIP switches

Before you attach your Cut Sheet Feeder and expansion bins to your ImageWriter LQ, you must change the settings of three DIP switches at the left rear of the printer. These switch settings indicate the number of bins (one, two, or three) attached to the printer, as well as whether you are using an envelope attachment. The printer relies on the DIP switch settings to feed paper correctly from the bins.

Here's how to set the switches:

1. Make sure that the printer is off.
2. Open the DIP switch cover at the left rear of the printer with your finger. See Figure A-7.

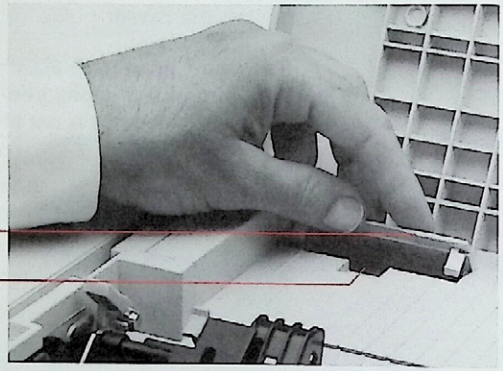


Figure A-7
DIP switch cover

3. Locate the middle block (SW2) of switches. The DIP switch label on the back of the cover identifies default switch settings.
4. Find the settings in Table A-1 that correspond to the number of bins you plan to attach.

Table A-1
Cut Sheet Feeder DIP switch settings

Number of bins	DIP SW2-5	DIP SW2-6	DIP SW2-7
One bin attached	Open	Open	Closed
Two bins attached	Closed	Open	Closed
Three bins attached	Open or closed	Closed	Closed
One bin and envelope	Open	Open	Open
Two bins and envelope	Closed	Open	Open
Three bins and envelope	Open or closed	Closed	Open

Note: A sensor in the printer actually detects whether or not a Cut Sheet Feeder is installed. You don't need to re-configure the DIP switches when you remove the Cut Sheet Feeder to use pinfeed paper.

5. With a small screwdriver or pen, push each switch you need to change in the appropriate direction to change its setting. (Open DIP switches point towards the back of the printer; closed DIP switches point towards the front.)
6. Close the DIP switch cover.

Important Any time you change DIP switch settings, you must cycle the power, by turning the printer off and then on again, so the printer can recognize the changes you've made.

Installing Cut Sheet Feeder bins

The instructions in this section explain how to assemble and install your Cut Sheet Feeder bins and put all the pieces together. Follow the instructions appropriate to the number of bins that you are attaching at this time.

❖ *Note:* If you purchase additional expansion bins or an envelope attachment after your original installation, be sure to follow the instructions in "Removing the Cut Sheet Feeder to Connect Additional Bins," later in this appendix.

Assembling the Cut Sheet Feeder (bin 1)

The contents of the Apple ImageWriter LQ Cut Sheet Feeder box assemble as bin 1. You opened this box already. Here's how to assemble bin 1:

1. Pull up the paper tension release lever that's on the left outside of the Cut Sheet Feeder. See Figure A-8.

   When the paper tension release lever is down, it keeps paper under tension; when it is up, it releases tension by separating the bins from the rollers.

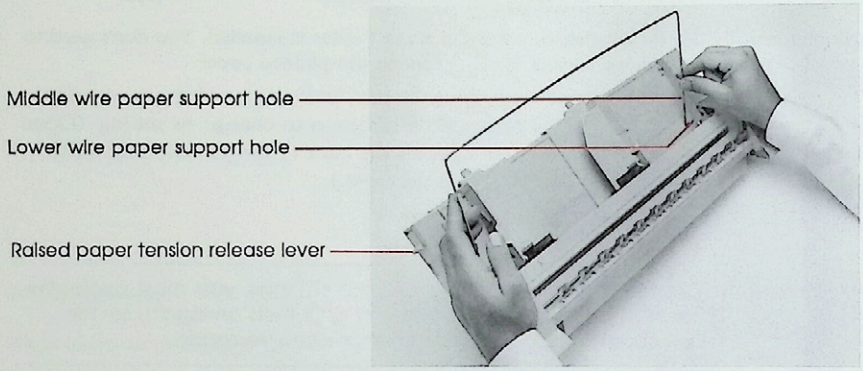


Figure A-8
Assembling the Cut Sheet Feeder

2. Place the ends of the wire paper support into the holes on the sides of the Cut Sheet Feeder. See Figure A-8.

   Use the lower holes for standard (8.5 by 11-inch) or A4 (8.25 by 11.6-inch) paper.

   Use the middle holes for nonstandard (legal or A3 size) paper.

3. Snap the wire paper support into the plastic guides on the sides of the Cut Sheet Feeder at either end of the ruler. See Figure A-9.

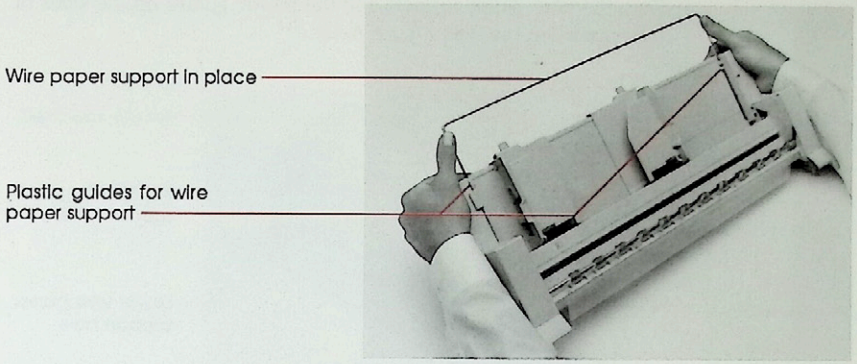


Figure A-9
Wire paper support installed

If you are attaching only one bin (the Cut Sheet Feeder), go on to the section "Putting the Pieces Together." If you are attaching more bins, see the section that follows, "Assembling Expansion Bins (Bins 2 and 3)."

Assembling expansion bins (bins 2 and 3)

Assembling an ImageWriter LQ expansion bin is very similar to assembling the Cut Sheet Feeder. Follow these steps to unpack and assemble each of the expansion bins you'll be using:

1. Open the Apple ImageWriter LQ Expansion Bin box. Pull the bin up and out, and remove the packing materials.
2. Pull up the paper tension release lever on the left side of the expansion bin. See Figure A-10.
3. Place the ends of the wire paper support into the holes on the sides of the expansion bin. See Figure A-10.

   Use the lower holes for standard (8.5 by 11-inch) or A4 (8.25 by 11.6-inch) paper.

   Use the middle holes for nonstandard (legal or A3 size) paper.

4. Snap the wire paper support into the plastic guides on the sides of the expansion bin. See Figure A-10.

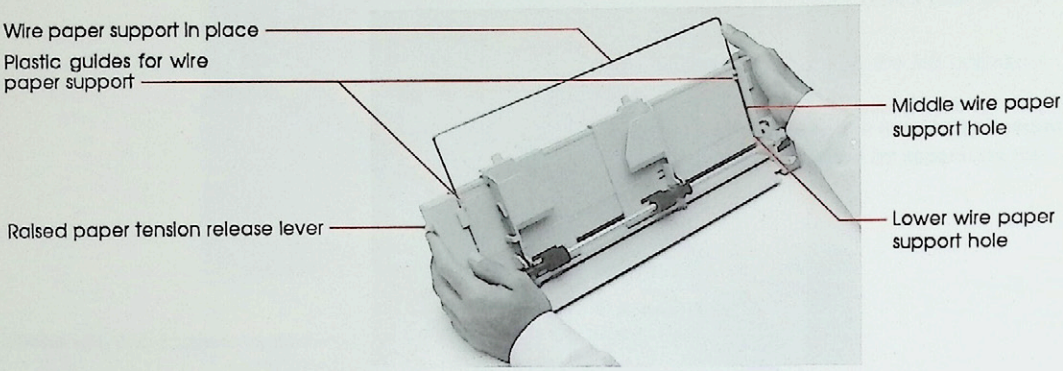

Wire paper support in place
Plastic guides for wire paper support
Raised paper tension release lever
Middle wire paper support hole
Lower wire paper support hole

Figure A-10
Assembled expansion bin

If you are connecting a single expansion bin to the Cut Sheet Feeder, go on to the next section. If you are connecting two expansion bins to the Cut Sheet Feeder, assemble both of them with the above instructions, and then see the section "Connecting the Cut Sheet Feeder to Two Expansion Bins."

Connecting the Cut Sheet Feeder to one expansion bin

Follow these instructions if you are connecting a single expansion bin to the Cut Sheet Feeder:

1. Turn over the Cut Sheet Feeder so that you are looking at the back side.
2. With a small screwdriver or your fingernail, remove the gear box covers (end caps) from the Cut Sheet Feeder. See Figure A-11.

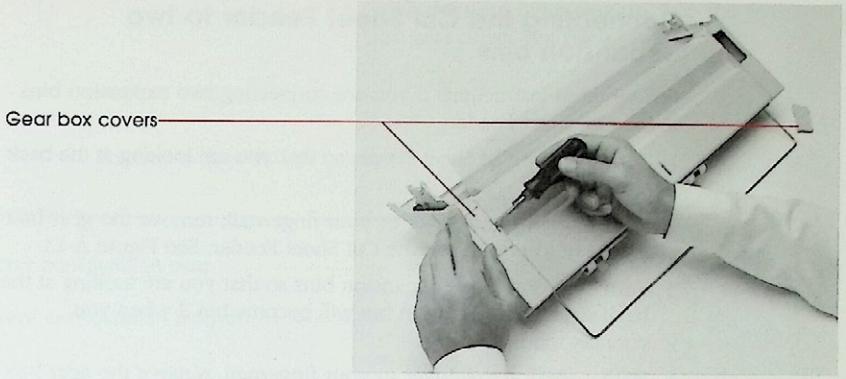


Figure A-11
Removing the gear box covers

3. With both the expansion bin and Cut Sheet Feeder facing down, line up the expansion bin tabs over the Cut Sheet Feeder gear box openings. See Figure A-12.

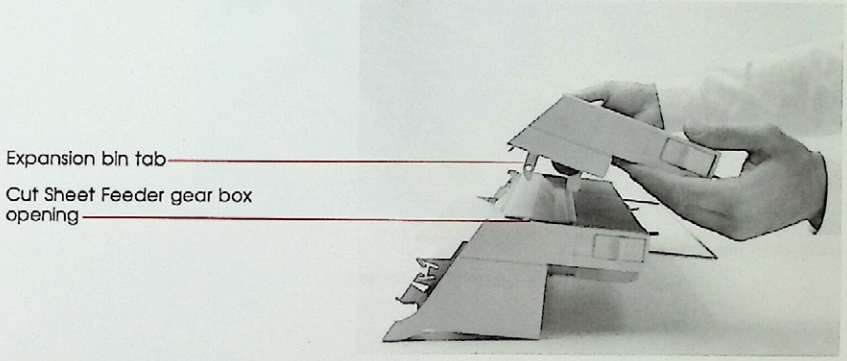


Figure A-12
Aligning an expansion bin with the Cut Sheet Feeder

4. Press the expansion bin into the Cut Sheet Feeder until they lock together.

Now see "Putting the Pieces Together."

Connecting the Cut Sheet Feeder to two expansion bins

Follow these instructions if you are connecting two expansion bins to the Cut Sheet Feeder:

1. Turn over the Cut Sheet Feeder so that you are looking at the back side.
2. With a small screwdriver or your fingernail, remove the gear box covers (end caps) from the Cut Sheet Feeder. See Figure A-13.
3. Turn over one of the expansion bins so that you are looking at the back side. This expansion bin will become bin 2 when you connect the bins.
4. With a small screwdriver or your fingernail, remove the gear box covers from expansion bin 2. See Figure A-13.

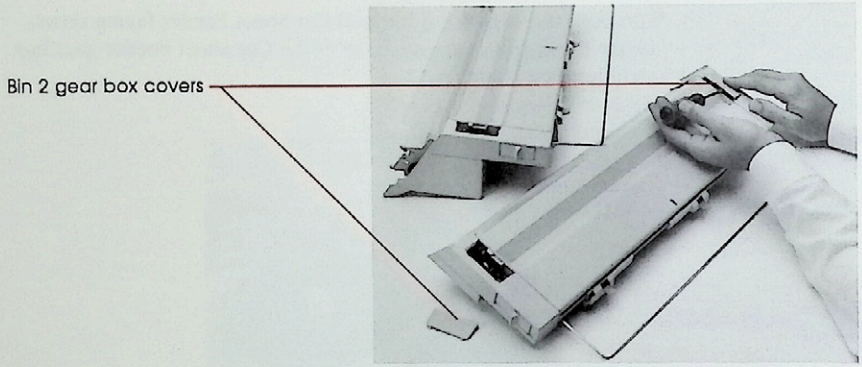


Figure A-13
Removing the gear box covers

5. With the third bin facing up, pop the gear configuration plug off the gear drive. See Figure A-14.

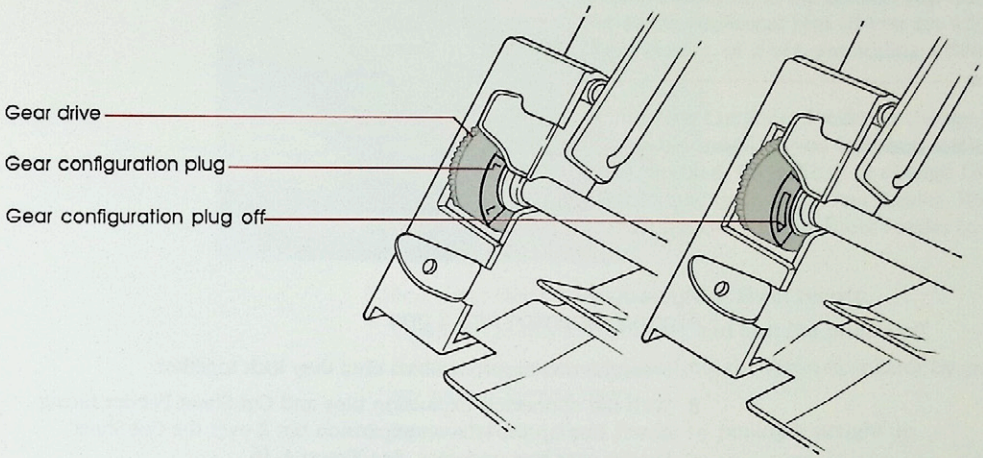


Figure A-14
Removing the gear configuration plug

Warning The Cut Sheet Feeder and two expansion bins won't work unless you remove the configuration plug from the third bin.

6. With both the expansion bins facing down, line up the tabs on expansion bin 3 over the open gear box openings on expansion bin 2. See Figure A-15.

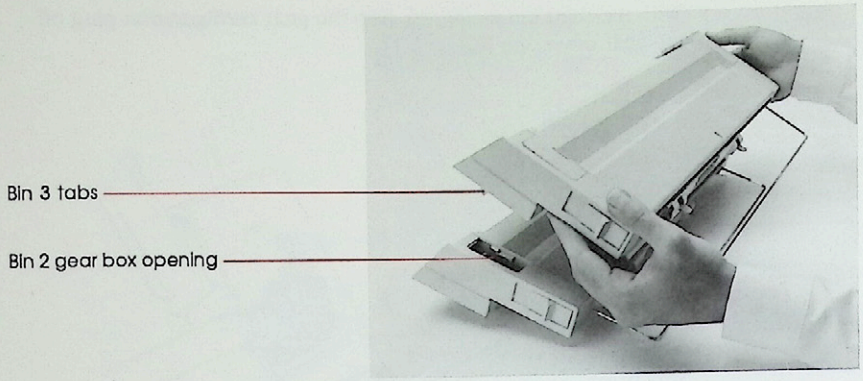


Figure A-15
Aligning expansion bins 2 and 3

7. Press the two expansion bins until they lock together.
8. With the connected expansion bins and Cut Sheet Feeder facing down, line up the tabs on expansion bin 2 over the Cut Sheet Feeder gear box openings. See Figure A-16.

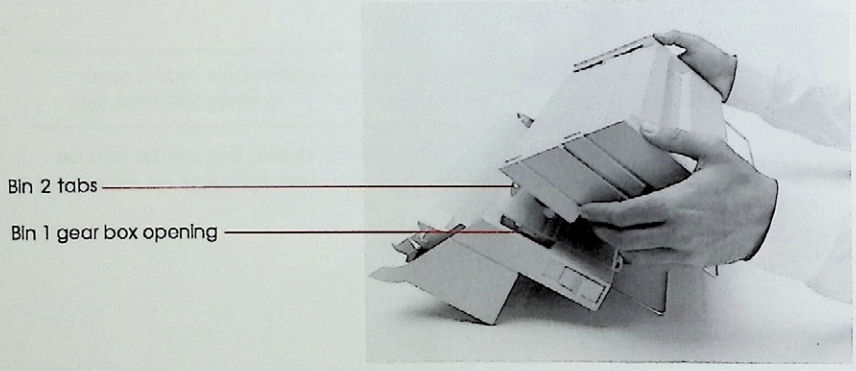


Figure A-16
Aligning two expansion bins with the Cut Sheet Feeder

9. Press the two expansion bins into the Cut Sheet Feeder until they lock together.

Now see "Putting the Pieces Together."

Removing the Cut Sheet Feeder to connect additional bins

Once your Cut Sheet Feeder is attached to the printer, you need to remove it before you can attach additional bins (if you are adding a second bin to the Cut Sheet Feeder, or if you are adding a third bin to bins 1 and 2).

You may also need to remove the Cut Sheet Feeder to change DIP switch settings. With a single bin installed, you simply remove the filler panels. With two bins installed, it's difficult to change DIP switch settings without first removing the Cut Sheet Feeder. With three bins installed, you must remove the Cut Sheet Feeder to change DIP switch settings.

Follow these steps to remove the Cut Sheet Feeder:

1. Open the printer's front cover and turn the printer off.
2. Remove the paper supports from the forward collator by pulling up and unclipping them.
3. Remove the Cut Sheet Feeder by pulling it straight up.
4. Remove the filler panels from the rear of the printer by sliding them out.

Now you are ready to connect another bin to the Cut Sheet Feeder or to change DIP switch settings. See the earlier sections "Connecting the Cut Sheet Feeder to One Expansion Bin," "Connecting the Cut Sheet Feeder to Two Expansion Bins," or "Setting the Printer DIP Switches" as applicable.

Putting the pieces together

Once you have assembled and connected the Cut Sheet Feeder and expansion bins, installing them on the ImageWriter LQ is simple. Follow these steps whether you are installing one, two, or three bins:

1. Open the front cover of the printer.

2. Make sure that the paper-feed lever next to the platen knob is pushed back for friction feed, that the ribbon cartridge is in place, and that the paper thickness lever on the left of the printer is pushed back, to position 1, for single sheet use.
3. Pull up on the paper bail so that it locks open.

   The paper bail will stay in this position when you use the Cut Sheet Feeder.
4. Find the metal mounting posts on the inside of the printer side frames, next to the gears and in front of the tractor. See Figure A-17.

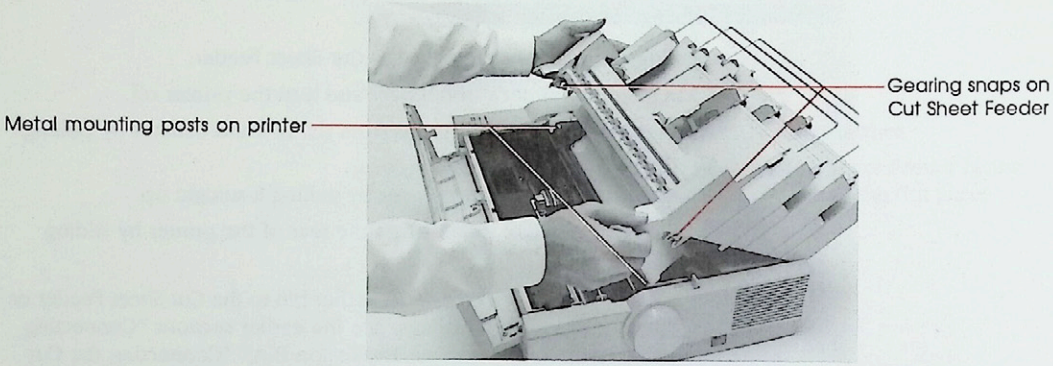


Figure A-17
Aligning the Cut Sheet Feeder with the printer for installation

5. Holding the Cut Sheet Feeder and attached expansion bins with both hands, align the gearing snaps on the Cut Sheet Feeder with the metal mounting posts on the printer. Place the holes below the Cut Sheet Feeder gearing snaps onto the mounting posts so that they mesh.

   Note that the paper bail should be in front of the gearing snaps.
6. Snap the Cut Sheet Feeder into place.
7. Attach the forward collator. See Figure A-18.

Align the notch on the rear of the collator with the vertical ridge on the Cut Sheet Feeder; then tilt the bottom of the collator forward and lift it up to snap into place. Be sure not to trap the plastic "fingers" on the Cut Sheet Feeder.

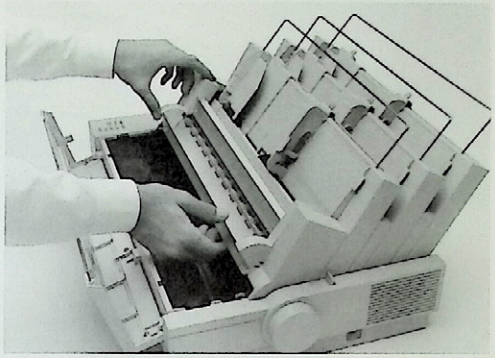


Figure A-18
Attaching the forward collator

8. Clip the paper deflector onto the front of the forward collator and pull it forward to snap it into place. (See Figure A-19.) Then close the front cover.

   The paper deflector pushes paper into the output bin, which holds up to 200 printed sheets.

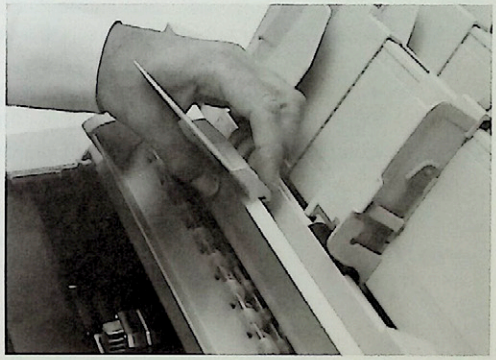


Figure A-19
Attaching the paper deflector

9. Slide the paper supports onto the forward collator (the angled front part) on either side of the paper deflector. Push back to clip the paper supports on. See Figure A-20.

   The paper supports hold up paper as it comes out of the Cut Sheet Feeder. You'll readjust them after you load paper.

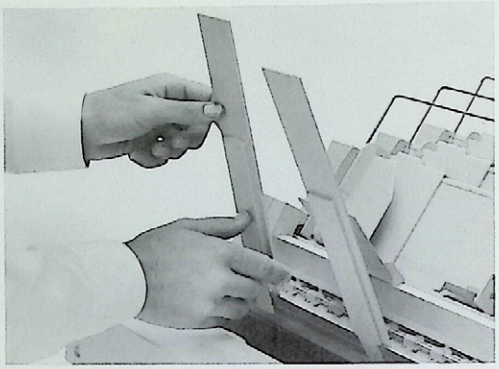


Figure A-20
Attaching the paper supports

10. Slide the filler panels into the rear of the printer, behind the Cut Sheet Feeder:

    - If you have a single expansion bin attached, use two filler panels. Connect the two panels by inserting the hooks on one into the holes on the other so the two angled pieces fit together. (See Figure A-21.) Then slide the two filler panels in behind bin 1 with the angle edge against the back of the bin. See Figure A-22.
    - If you have two bins (the Cut Sheet Feeder and expansion bin 2) attached, use the filler panel with the squared-off back. Slide the filler panel in behind bin 2 with the angle edge against the back of the bin.
    - If you have three bins (the Cut Sheet Feeder and expansion bins 2 and 3) attached, you don't need any filler panels.

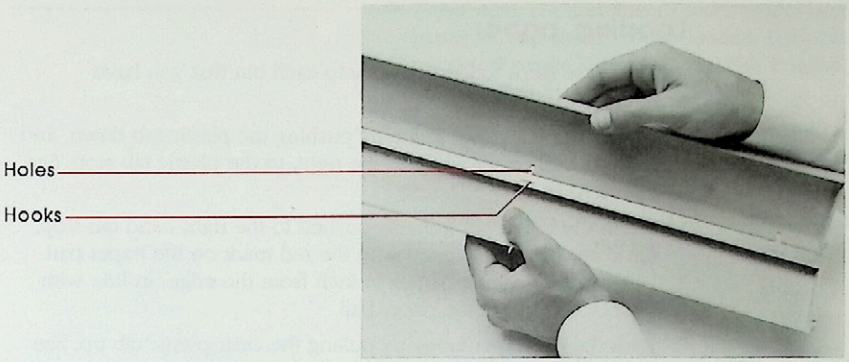


Figure A-21
Connecting two filler panels

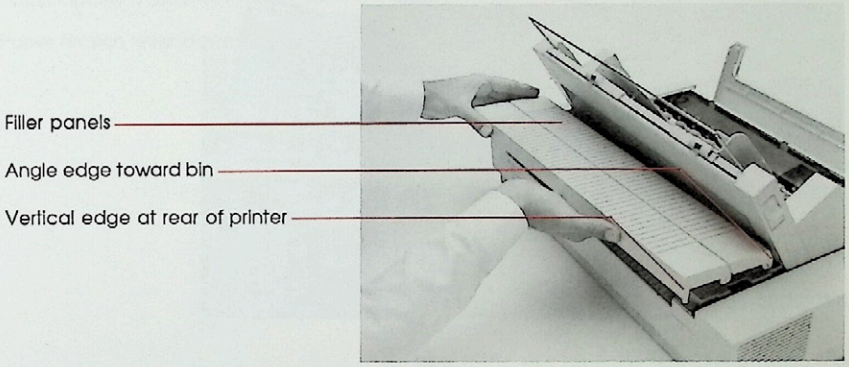


Figure A-22
Sliding the rear filler panel in

Now that you have all the pieces together, see the next section, "Loading Paper."

Loading paper

Follow these steps to load paper into each bin that you have attached.

1. Unlock the left paper guide by pushing the plastic tab down, and slide the left paper guide to the right, to the plastic tab stop. See Figure A-23.

   When the left paper guide is pushed to the right-hand tab stop, cut-sheet paper is aligned with the red mark on the paper bail. Left-margin printing begins ¼ inch from the edge, in line with the black mark on the paper bail.

2. Lock the left paper guide by pulling the clear plastic tab up. See Figure A-23.

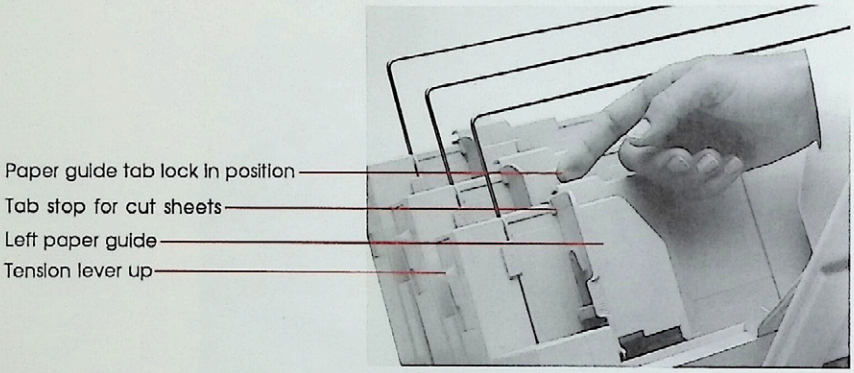


Figure A-23
Locking the paper guide

3. Unlock and slide the right paper guide to the far right.
4. Push the tension lever into the up position. See Figure A-23.
5. Fan the paper stack, then insert your paper so the left edge lines up against the left paper guide.

   Load letterhead upside down and facing towards the rear of the printer.

❖ *Paper note:* The Cut Sheet Feeder works best with 20-pound paper and up to 100 sheets loaded. For optimal results, use uncoated paper like Antique, Laid, English, Linen, Cockle, Woven, Policy, Vellum, or Smooth.

6. Gently tap or push the right paper guide until it stops next to the paper edge, then lock it with the clear plastic tab upright. See Figure A-24.

   Make sure your paper stack is not jammed against the left paper guide or too loose in the bin.

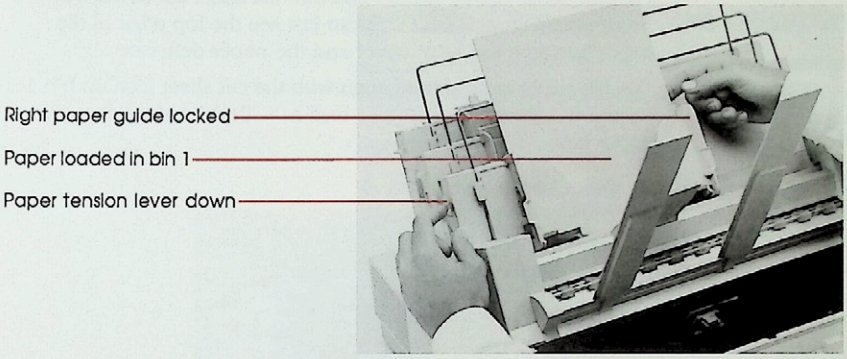


Figure A-24
Paper loaded in Cut Sheet Feeder

7. Push the tension lever on the left side of the bin down. See Figure A-24.

   Be sure to do this on each bin. The tension lever provides tension on the paper so that it feeds properly.

Once you have loaded paper in all attached bins, you need to position the paper deflector and paper supports on the forward collator to hold paper in place as it's fed through the printer; then you can test the paper feeding. Follow these steps:

1. Slide the paper deflector so it's centered in the middle of the paper.

2. Space the paper supports about three or four inches apart, and equidistant from the center of the paper.

   The paper supports must be in the paper path, but their exact position doesn't matter.

3. Close the printer's front cover and turn the power on.

   ❖ *Note:* No electrical connections between the Cut Sheet Feeder and the printer are necessary.

4. To test the paper feed, make sure that the Select button is off, then press the Form Feed button.

   The Cut Sheet Feeder should pull the first sheet about halfway down. (See Figure A-25.) You can just see the top edge of the paper between the front cover and the paper deflector.

   The left paper edge should align with the cut sheet icon on bin 1 behind the forward collator, as well as with the red mark on the paper bail.

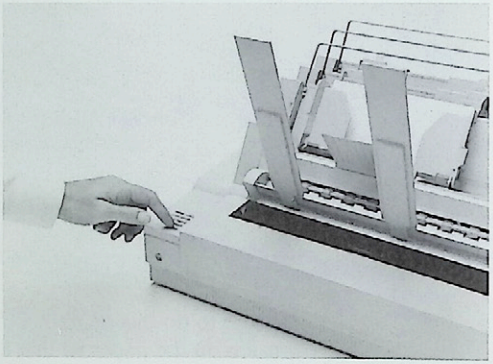


Figure A-25
Cut Sheet Feeder paper feed

5. Press the Select button to turn the Select light back on.

If you're not installing an envelope attachment, you're now ready to print with the Cut Sheet Feeder. Use the Page Setup or Print dialog box in the software you are using for Cut Sheet Feeder bin selection.

If you are installing an envelope attachment, see the next section.

❖ *Manual feeding:* You can use the manual feed slot between bin 1 and the forward collator to insert individual sheets or envelopes by hand. Use the icon in front of the manual feed slot and the red mark on the paper bail for alignment. If you are inserting an envelope, remember to adjust the paper thickness lever to position 4.

The Form Feed button will load a manually inserted sheet before a bin-fed sheet.

Installing the envelope attachment

You physically install the envelope attachment after you have installed the Cut Sheet Feeder on the ImageWriter LQ. The envelope attachment goes into bin 1, no matter how many bins you have installed.

❖ *DIP switch note:* Be sure you have set the printer DIP switches correctly for an envelope attachment. (See Table A-1.) If your DIP switches aren't set correctly, you may have to remove the Cut Sheet Feeder to change the switches before you install the envelope attachment. See the section "Removing the Cut Sheet Feeder to Connect Additional Bins" earlier in this appendix.

Follow these steps to install the envelope attachment:

1. Make sure that the paper tension lever on the Cut Sheet Feeder is up (off).
2. Unlock and move the left paper guide to the left until it reaches the tab stop for envelopes. See Figure A-26.

   When the left paper guide is pushed to the left-hand tab stop, envelopes are aligned with the red mark on the paper bail. Left margin printing begins ¼ inch from the envelope edge, in line with the black mark on the paper bail.
3. Unlock the right paper guide on the Cut Sheet Feeder by pushing the tab down, and widen the right paper guide so there are about nine inches between the two paper guides.

4. Remove the envelope attachment from its box and turn it so that the flat side is down and the bin that holds envelopes is up, towards you. See Figure A-26.

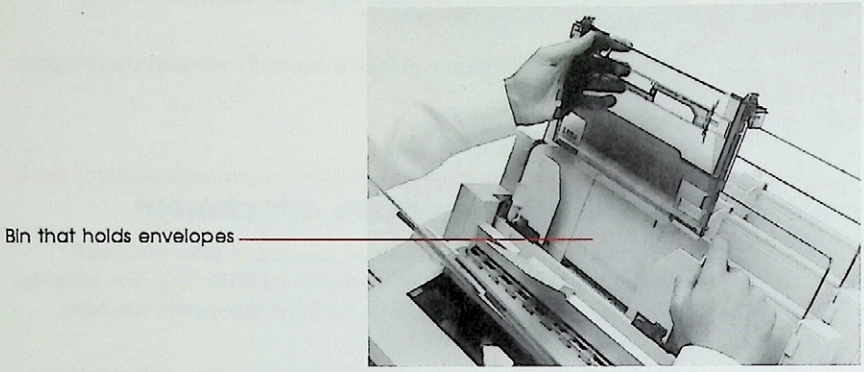


Figure A-26
Envelope attachment

5. Slide the envelope attachment part way into the Cut Sheet Feeder (bin 1) with the left side of the envelope attachment flush against the left paper guide. See Figure A-27.

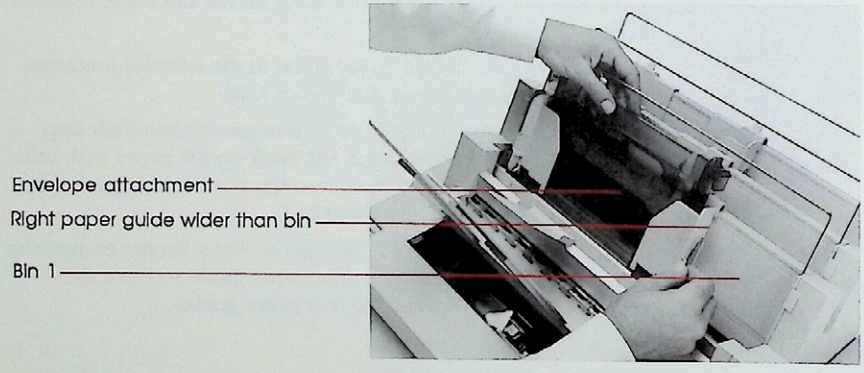


Figure A-27
Inserting the envelope attachment

Important The edge of the envelope must align with the cut sheet icon on bin 1 behind the forward collator and with the vertical red mark on the paper ball so that printing will begin no further to the left than the black mark on the ball, at least 1/4 inch in from the edge. Proper alignment prevents print head damage.

6. Push the right paper guide on the Cut Sheet Feeder flush against the envelope attachment.
7. Push the envelope attachment all the way down.
8. Lock the right paper guide by pulling up on the tab.
9. Push the envelope guides to their widest point.
10. Load your envelopes upside down with the back side facing you. Push them all the way down and flush left. See Figure A-28.

    The envelope attachment works best with from 1 to 20 envelopes of #10, or equivalent size, loaded at a time.

    Make sure that your envelopes are not interweaved (one inside another) so they won't jam.

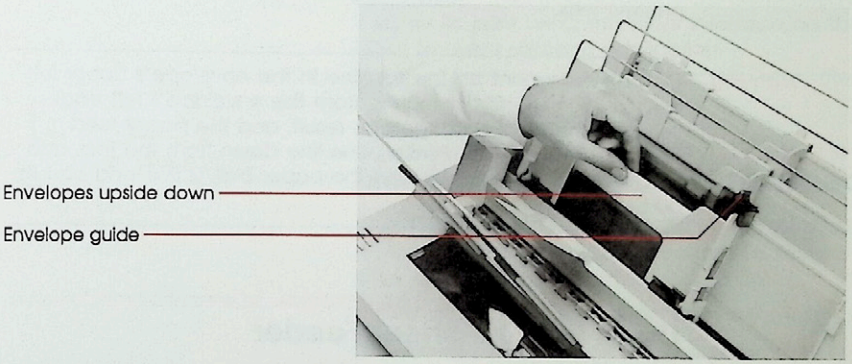


Figure A-28
Loading envelopes

11. Push the envelope guides back so they touch the edges of the envelopes.
12. Lock the paper tension lever on the Cut Sheet Feeder by pushing it down.
13. Move the paper thickness lever forward to the fourth position.

    If your envelopes are unusually thick, you may need to adjust the lever later. The lever has five possible positions.
14. To make sure envelope feeding works correctly, press the Select button to turn Select off, and press the Form Feed button. The envelope should feed in so its left edge aligns with the red mark on the paper bail. Press the Form Feed button again to remove the test envelope. Turn Select on to print.

Printing on envelopes

Always make sure you adjust the paper thickness lever before you print on envelopes. Because of having to make this adjustment, it is better to do envelope printing jobs separately from single-sheet printing jobs.

Warning Do not try to print on the top line in the envelope's upper left corner or on the first ¼ inch in from the envelope's left edge. Serious print head damage can result, and the paper feed mechanism may jam. Printing one line down from the top, and in line with the black mark on the paper bail, is fine and causes no problems.

Using the Cut Sheet Feeder

When you are ready to print with the Cut Sheet Feeder, use the Page Setup or Print dialog box in your software to make bin-feeding selections. To ensure highest print quality, use the unidirectional selection in the print dialog and avoid printing on the bottom inch of cut sheet paper.

Warning Do not use the Cut Sheet Feeder with applications that use reverse line feeds. Use push tractor or single sheet feeding.

Specific methods of Cut Sheet Feeder use vary from application to application. Some applications may only allow access from one bin per print job. Others applications allow for bin selection as presented in Print dialog boxes. Other applications may not be updated for Cut Sheet Feeder use.

See your application manual for application-specific directions on Cut Sheet Feeder use. The Help button in the Print dialog box may provide assistance or more information.

❖ *Note:* If you make bin selections from the Print Options dialog box, but they don't seem to work, your application may not take advantage of triple bin selection. You can still get printing from any one bin selection.

Important If you have your printer and Cut Sheet Feeder connected to an AppleTalk network, and find that separate print jobs are getting mixed up, the problem is probably the way your application treats documents.

AppleTalk puts each document in a printing queue. Some applications treat each separate page as a document. If your application does this, print jobs will be interleaved. The solution is either to print using the serial interface on the ImageWriter LQ or to use a different application.

Maintaining your Cut Sheet Feeder

Your Cut Sheet Feeder is designed to operate reliably over a long period of time with minimal attention. Cleaning is the only preventative maintenance you need to do.

- ☐ Remove the Cut Sheet Feeder from the printer to dust it.
- ☐ Clean all pick-up rollers with a lint-free cloth and platen cleaner.
- ☐ Keep the printer platen clean.

Do not use platen cleaner on the plastic parts of the feeder; platen cleaner melts plastic.

Platen cleaner is available from your authorized Apple dealer.

Troubleshooting

Table A-2 lists problems, causes, and possible solutions for Cut Sheet Feeder malfunction. If you cannot correct the problem with the recommended actions, see your authorized Apple dealer.

Table A-2
Troubleshooting chart

Problem	Possible cause	Solution
Feeder does not operate	Paper stack not loaded correctly	Fan and reload paper
	Platen motion not transferred to feeder	Check paper tension lever on bin
	DIP switches not set correctly	Change DIP switch settings (see Table A-1)
No paper feed	Out of paper	Reload paper bin
	Paper jam	Remove jammed paper
	No tension on paper	Push bin paper tension lever down; check software bin selection; make sure paper-feed lever is set to friction feed
More than 1 sheet feeds at a time	Paper not sufficiently fanned	Fan and reload paper
	Paper out of specification	Replace with new paper conforming to paper specification (See Table C-1)
	Paper bin misaligned	Adjust paper guides and reload bin
Paper skew	Paper damaged	Replace with new paper
	Bin not adjusted properly for paper	Adjust paper guides and reload bin
	Feeder roller not gripping paper	Check paper surface for defects; clean rollers

Table A-2
Troubleshooting chart (cont.)

Problem	Possible cause	Solution
Paper eject problem	Output stacker full	Empty output stacker (holds 200 sheets)
	Trying to print in corners	Print ⅛ inch down and at least 1 inch in from corners
	Paper out of specification	Replace with new paper conforming to paper specification
Feeder inserts paper correctly to platen, but then paper skews	Printer problem	See your authorized Apple dealer
Feeder only feeds from one bin	Application may not support multiple bin feeding	Check your application software's manual or see your authorized Apple dealer
	DIP switches not set correctly	Change DIP switch settings (see Table A-1)
	Bin selection not chosen correctly	Make proper bin selection in Print dialog or Page Setup box
Document spacing is wrong	Application software uses reverse line feed	Use push tractor or single sheet feeding methods or consult an authorized dealer for possible software update.

Disassembling the Cut Sheet Feeder

If you need to reconfigure the Cut Sheet Feeder for some reason—to remove a bin to use on a different ImageWriter LQ, or because a bin is malfunctioning, for example—follow these instructions to disassemble it:

1. Open the printer's front cover.
2. Remove the paper deflector from the forward collator by pressing on the bottom while you push back and snap it off.
3. Remove the paper supports from the forward collator by pulling forward and up and unclipping them.

4. Remove the forward collator portion of the Cut Sheet Feeder: with your thumbs on either side of the forward collator frame, pull forward and up. See Figure A-29.

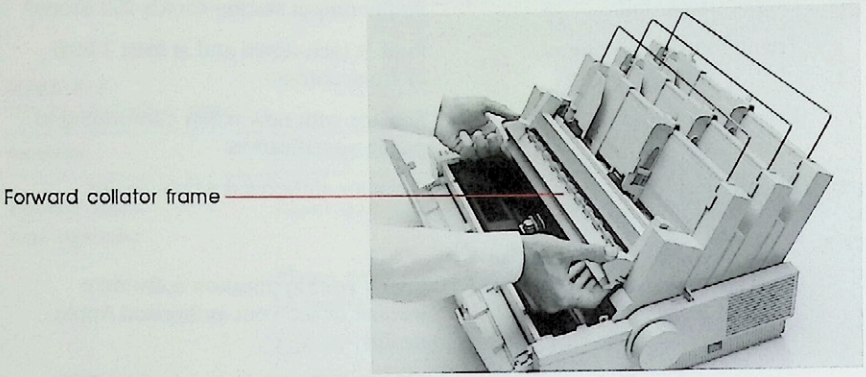


Figure A-29
Removing the forward collator

5. Remove the Cut Sheet Feeder by pulling straight up.
6. Remove the filler panels from the rear of the printer by sliding them out.
7. Pull up the paper tension release lever on the left side of the Cut Sheet Feeder. Then slide the two paper guides in towards the center. (See Figure A-24 for details.)

8. Locate the hole just below the wire paper guide. Push the point of a screwdriver or pen into that hole. See Figure A-30.

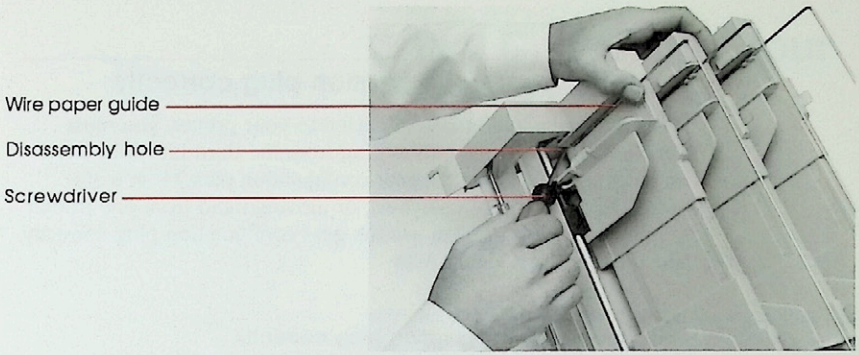


Figure A-30
Disassembling the Cut Sheet Feeder

9. With your left hand squeezing the top of bins 1 and 2, press hard in the hole with the screwdriver. See Figure A-30.
10. When the bins snap apart on the left, wiggle the two right sides slightly to pull the two bins completely apart. See Figure A-31.

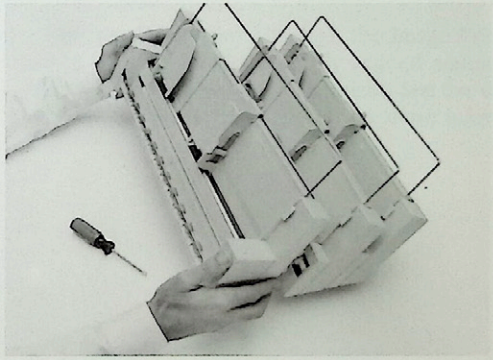


Figure A-31
Separating the bins

11. Repeat steps 7 through 10 to separate bins 2 and 3.

When you reconfigure your bins, be sure to remove or replace the gear configuration plug as needed. See the next section.

Using the gear configuration plug correctly

When you have three bins connected to your printer, you must remove the gear configuration plug from the third bin. (Bin 1 has no plug, and bin 2 uses the gear configuration plug.) If you are switching the order of your bins, or moving them from one printer to another, make sure you use the gear configuration plug correctly. See Table A-3 and Figure A-14.

Table A-3
Using the gear configuration plug correctly

If remove	and use as	what to do with plug
Bin 3	Bin 2	Replace plug
Bin 2	Bin 2	OK as is (plug intact)
Bin 2	Bin 3	Remove plug

Appendix B

Using Color With Your ImageWriter LQ

With a color ribbon in place and software that takes advantage of Apple II and Macintosh color capabilities, you can print documents and graphics in seven colors on the ImageWriter LQ. If your software lets you mix colors on a palette, the printer will reproduce any of the hues you design. The number of colors you can produce, beyond the original seven, is application dependent.

The color ribbon for the ImageWriter LQ has three colors (yellow, magenta, and cyan) and black. The printer can automatically mix any two of the colors to produce three more (orange, green, and purple). Software commands control the number and range of colors the ImageWriter LQ produces.

- *Color bleed problems?* Although the ImageWriter LQ is factory-set to print colors in a properly aligned manner, occasionally a ribbon will need a slight adjustment. See the section "Color Ribbon Problems" in Chapter 8 for more information.

Appendix C

ImageWriter LQ Printer and Interface Specifications

Abbreviations used in the figures and tables in this appendix include

- cpi—characters per inch
- dpi—dots per inch
- cps—characters per second
- cpl—characters per line
- lpi—lines per inch
- lps—lines per second
- h—horizontal
- v—vertical
- mm—millimeter
- LQ—Letter quality printing
- NLQ—Near letter quality printing
- Draft—Draft quality printing

Table C-1
Printer specifications

Print method	Dot matrix, logic seek (line by line). Color printing with color ribbon.
Printing speed	Draft (fixed width): max 250 cps @ 10 cpi at 60 dpi Draft (proportional): max 145 cps* at 60 dpi NLQ (fixed width): max 90 cps @ 10 cpi at 160 dpi NLQ (proportional): max 145 cps* at 160 dpi LQ (proportional): max 115 cps* at 216 dpi
*shannon text	
Character format	Draft characters—up to 12 dots wide by 8 dots high NLQ characters—up to 16 dots wide by 24 dots high
Graphics resolution	Low resolution—72 (h) by 72 (v) to 160 (h) by 72 (v) dpi High resolution—144 (h) by 216 (v) to 320 (h) by 216 (v) dpi
Standard characters	96 ASCII (alphanumeric and symbols); 28 European language characters
Vertical dot spacing	1/72 inch, 1/144 inch, or 1/216 inch
Printed line length	13.6 inches maximum

Horizontal pitches

Fixed width Draft: (half-dot density)	CPI (normal)	CPI (double)	CPL (8" line)	CPL (13.6" line)	DPI (approx.)
	17	8.5	136	231	102
	15	7.5	120	204	90
	13.4	6.7	107	182	81
	12	6	96	163	72
	10	5	80	136	60
	9	4.5	72	122	54

Fixed width NLQ:	CPI (normal)	CPI (double)	CPL (8" line)	CPL (13.6" line)	DPI (approx.)
	17	8.5	136	231	272
	15	7.5	120	204	240
	13.4	6.7	107	182	216
	12	6	96	163	192
	10	5	80	136	160
	9	4.5	72	122	144

Horizontal pitches (cont.)				
Proportional (with both SW1-6 and SW1-7 closed):		CPL	DPI (H)	DPI (I)
	Draft proportional (half-dot density)	variable	144 & 160	72
	NLQ proportional (full-dot density)	variable	144 & 160	216
	LQ proportional	variable	216	216

Paper feed direction	Forward or reverse (reverse disabled in pull tractor mode or with Cut Sheet Feeder)
Line spacing	1/144 inch minimum, with increments of 1/144 inch up to 99/144 inch maximum
Line feed speed	Maximum 24 lps @ 6 lpi
Paper width	3.5 to 15 inches pin hole to pin hole (pin-feed), 15.5 inches maximum width
Paper thickness	0.05 to 0.55 mm, 0.002 to 0.028 inch, 16- to 24-lb. paper Original, plus 4 copies maximum
Paper feed method	Selectable: friction or pin-feed push and pull, adjustable tractors, and automatic sheet feeder optional
Paper types	Single sheets, pin-feed (hole centers 3.5 to 15 inches), multicopy (original, plus 4 copies), labels, and envelopes (#10 or equivalent)
Ribbon	Cassette containing black-inked fabric ribbon, 25.4 mm wide by 20,000 mm long, continuous Optional color ribbon 25.4 mm wide by 20,000 mm long, continuous
Power options	
American	120 volts AC ± 10%, 60 hertz
Universal	100 volts AC ± 10%, 50/60 hertz 120 volts AC ± 10%, 50/60 hertz 140 volts AC ± 10%, 50/60 hertz 220 volts AC ± 10%, 50/60 hertz 240 volts AC ± 10%, 50/60 hertz
Power consumption	
Operating	180 watts maximum
Standby	20 watts maximum

Data interface	8-bit serial		
Weight	17 kilograms (38 pounds)		
Dimensions	Width	Depth	Height
	590 mm	380 mm	130 mm
	23 inches	15 ¼ inches	5 ⅛ inches
Ambient temperature			
Operating	10 to 40°C (50 to 104°F)		
Storage	-40 to +47°C (-40 to +116°F)		
Humidity			
Operating	20% to 90% relative humidity, noncondensing		
Storage	10% to 95% relative humidity, noncondensing		

Table C-2
ImageWriter LQ DIP switch settings

National character set	SW1-1	SW1-2	SW1-3
American (default)	Open	Open	Open
Italian	Closed	Open	Open
Danish	Open	Closed	Open
British	Closed	Closed	Open
German	Open	Open	Closed
Swedish	Closed	Open	Closed
French	Open	Closed	Closed
Spanish	Closed	Closed	Closed

Forms length	SW1-4
Form length 11 inches (66 lines; default)	Open
Form length 12 inches	Closed

Perforation skip	SW1-5
Perforation skip inactive (default)	Open
Perforation skip active	Closed

Character pitch	SW1-6	SW1-7
10 cpi fixed	Open	Open
12 cpi fixed (default)	Closed	Open
17 cpi fixed, ultracondensed	Open	Closed
160 dpi, Draft & NLQ proportional	Closed	Closed
216 dpi, LQ proportional	Closed	Closed

Note: SW1-6 and SW1-7 must be closed for proportional pitch.

Carriage return	SW1-8
Carriage return only (default)	Open
Carriage return plus line feed	Closed

Communications rate	SW2-1	SW2-2
19,200 baud (default)	Open	Open
9600 baud	Closed	Closed
2400 baud	Open	Closed
1200 baud	Closed	Open

Protocol	SW2-3
Hardware handshake protocol (DTR) (default)	Open
XON/XOFF protocol	Closed

Option card	SW2-4
Option disabled (no option card) (default)	Open
Option enabled	Closed

Cut Sheet Feeder	SW2-5	SW2-6	SW2-7
One bin attached	Open	Open	Closed
Two bins attached	Closed	Open	Closed
Three bins attached	Open or Closed	Closed	Closed
One bin & envelope	Open	Open	Open
Two bins & envelope	Closed	Open	Open
Three bins & envelope	Open or Closed	Closed	Open

Auto paper load	SW2-8
Load ⅙ inch above print line (default)	Open
Load 1⅙ inch above print line (use with pull tractor)	Closed

Note: Open DIP switches point towards the back of the printer; closed DIP switches point towards the front.

Warning Do not adjust DIP switch block SW3 yourself. Only authorized Apple dealer technicians should adjust that block of switches.

Table C-3
Interface specifications

Data input form	8-bit asynchronous serial: 1 start bit, 8 data bits, 1 stop bit (no parity)
Data input codes	Characters: ASCII, 8- or 7-bit Graphics: 8-bit binary
Transmission speed	19,200; 9600; 2400; or 1200 baud
Input buffer size	5K
Printer connector	Minicircular connector, 8-pin socket or equivalent
Cable connector	Minicircular connector, 8-pin plug or equivalent

Table C-4
Pin connections

Pin no.	Symbol	Description	Direction
1	DTR	Data Terminal Ready	Output
2	DSR	Data Set Ready	Input
3	TxD -	Transmit data -	Output
4	SG	Signal ground	
5	RxD -	Receive data -	Input
6	TxD +	Balanced transmit +	Output
7	NC	No connection	
8	RxD +	Balanced receive +	Input
Shield	PG	Protective ground	

Table C-5
Cable connections

Minicircular connector (RS 422/423)	DB25-P (RS 232-C)	Symbol
1	6*	DSR
1	8*	DCD
2	20	DTR
3	3	RXD
4†	7	GND
5	2	TXD
6	—	NC
7	—	NC
8†	—	GND
Shield		Shield

* Jumpered together at DB25
† Jumpered together at minicircular connector

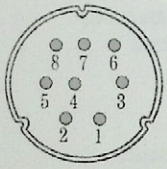


Figure C-1
8-pin, minicircular connector pinouts

Appendix D

ASCII Codes

ASCII stands for *American Standard Code for Information Interchange.* The first 128 of the codes listed represent a standard set of characters and commands used in data processing and communication. The remaining 128 codes are not assigned in the ASCII standard. Because they have higher numerical values than the first 128 characters, they are often referred to as high ASCII characters. All codes refer to internal fonts only.

For more complete information about programming with ASCII codes, as well as tables that provide hexadecimal and binary forms of the codes, see the *ImageWriter LQ Reference* manual.

The first 32 characters, known as control characters, can be sent from some keyboards by pressing the Control key simultaneously with the desired character key.

Table D-1
ASCII codes for normal characters (low ASCII)

Control char	ASCII code	Char	ASCII code	Char	ASCII code	Char	ASCII code	Char
Control-@	0	NULL	32	SPACE	64	@	96	`
Control-A	1	SOH	33	!	65	A	97	a
Control-B	2	STX	34	"	66	B	98	b
Control-C	3	ETX	35	#	67	C	99	c
Control-D	4	EOT	36	$	68	D	100	d
Control-E	5	ENQ	37	%	69	E	101	e
Control-F	6	ACK	38	&	70	F	102	f
Control-G	7	BELL	39	'	71	G	103	g
Control-H	8	BS	40	(	72	H	104	h
Control-I	9	HT	41	)	73	I	105	i
Control-J	10	LF	42	*	74	J	106	j
Control-K	11	VT	43	+	75	K	107	k
Control-L	12	FF	44	,	76	L	108	l
Control-M	13	CR	45	-	77	M	109	m
Control-N	14	SO	46	.	78	N	110	n
Control-O	15	SI	47	/	79	O	111	o
Control-P	16	DLE	48	0	80	P	112	p
Control-Q	17	DC1 (XON)	49	1	81	Q	113	q
Control-R	18	DC2	50	2	82	R	114	r
Control-S	19	DC3 (XOFF)	51	3	83	S	115	s
Control-T	20	DC4	52	4	84	T	116	t
Control-U	21	NAK	53	5	85	U	117	u
Control-V	22	SYN	54	6	86	V	118	v
Control-W	23	ETB	55	7	87	W	119	w
Control-X	24	CAN	56	8	88	X	120	x
Control-Y	25	EM	57	9	89	Y	121	y
Control-Z	26	SUB	58	:	90	Z	122	z
Control-[	27	ESC	59	;	91	[	123	{
Control-\	28	FS	60	<	92	\	124	|
Control-]	29	GS	61	=	93	]	125	}
Control-^	30	RS	62	>	94	^	126	~
Control-_	31	US	63	?	95	_	127	DEL

Table D-2
ASCII codes for Inverse screen characters (high ASCII)

ASCII code	Char	ASCII code	Char	ASCII code	Char	ASCII code	Char
128	@	160	SPACE	192		224	`
129	A	161	!	193		225	a
130	B	162	"	194		226	b
131	C	163	#	195		227	c
132	D	164)	$	196		228	d
133	E	165	%	197		229	e
134	F	166	&	198		230	f
135	G	167	'	199		231	g
136	H	168	(	200		232	h
137	I	169	)	201		233	i
138	J	170	*	202		234	j
139	K	171	+	203		235	k
140	L	172	,	204		236	l
141	M	173	-	205		237	m
142	N	174	.	206		238	n
143	O	175	/	207		239	o
144	P	176	0	208		240	p
145	Q	177	1	209		241	q
146	R	178	2	210		242	r
147	S	179	3	211		243	s
148	T	180	4	212		244	t
149	U	181	5	213		245	u
150	V	182	6	214		246	v
151	W	183	7	215		247	w
152	X	184	8	216		248	x
153	Y	185	9	217		249	y
154	Z	186	:	218		250	z
155	[	187	;	219		251	{
156	\	188	<	220		252	|
157	]	189	=	221		253	}
158	^	190	>	222		254	~
159	_	191	?	223		255	Blot

Appendix E

Controlling Printer Output Directly: For Apple II Users

This appendix has information you'll need if you're using an Apple II application which isn't specifically configured to work with the ImageWriter LQ, or in a program you've written yourself for the Apple II.

Important Most applications let you change a document's appearance on the screen through ruler settings and menu selections, or let you choose formatting options that are configured for the ImageWriter LQ. If you are using one of these applications, you probably won't need the information in this appendix.

This appendix introduces you to using **control codes, escape sequences,** and DIP switch settings. In general, there are three ways to change ImageWriter LQ default settings:

- You can type in a **setup string**—a group of characters beginning with Esc (the Escape key) or Control—that changes printer settings in some application programs.
- You can write your own program in languages like BASIC or Pascal. Such a program becomes necessary when an application does not allow direct control through software or a setup string.
- You can reset ImageWriter LQ DIP switch settings for long-term changes. Once you flip a switch, the setting stays in effect when

you turn the power off, unlike software-generated settings. For example, you might prefer to print in proportional pitch most of the time, instead of fixed pitch. If you can't change this setting from your word processing software, you can reset the appropriate DIP switches in the printer. (However, some software may ignore printer settings and use its own.)

Before you consider what changes you might make, it's a good idea to become familiar with the standard settings.

❖ *More information:* The Quick Reference Card at the back of this book contains a complete list of control codes, escape sequences, and DIP switch settings. Appendix C contains complete ImageWriter LQ printer and interface specifications. The *ImageWriter LQ Reference* manual has detailed programming information.

Standard settings for the ImageWriter LQ

Here is a partial list of standard settings for the ImageWriter LQ. If you need to change settings on your printer, these are the ones you're most likely to alter. The rest of this appendix shows you how to change these settings.

Table E-1
Standard ImageWriter LQ settings

Maximum line width	13.6 inches
Left margin	0
Character set	American
Characters per inch	12
Lines per inch	6
Lines per page	66
Line feed after carriage return	None
Baud (data transmission rate)	19,200 baud
Protocol	Hardware handshake
Horizontal tabs	Cleared

❖ *Apple IIGS users:* Use these settings to reconfigure the Modem port (port 2) if you have connected your ImageWriter LQ to it instead of to port 1. If your ImageWriter LQ is connected to port 1, there's no need to reconfigure.

Changing settings with DIP switches

The ImageWriter LQ has three DIP switch blocks, designated SW1, SW2, and SW3. They are located at the left rear of the printer, under the rear cover, inside the printer case. See Figure E-1.

Important The ImageWriter LQ self-test lists DIP switch settings with zero (0=OFF) and one (1=ON). This manual uses open for off and closed for on. Open DIP switches point towards the back of the printer. Closed DIP switches point towards the front of the printer. When you are changing DIP switches, be sure you are standing in front of the printer to get the correct settings.

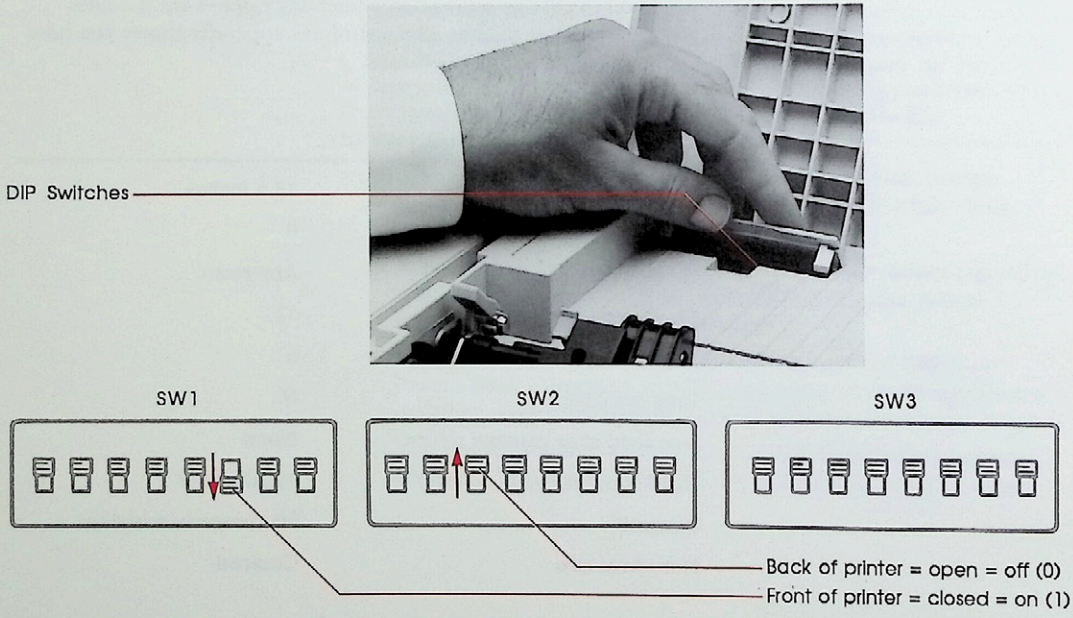


Figure E-1
DIP switch default settings

When you add options to your ImageWriter LQ—the Cut Sheet Feeder or an AppleTalk Option card—you change some of the DIP switch settings to reflect those additions.

When you are unable to set certain printing and formatting options in your software—like national character set, forms length, and characters per inch—you may also use the DIP switches to reconfigure the printer.

Tables E-2 and E-3 show the **default** settings for each block of switches and describe the functions of the switches. If you are reading this section to help with troubleshooting, compare the actual switch settings in your ImageWriter LQ with the default settings shown in Figure E-1.

When you need to change the printer DIP switch settings, follow these steps:

1. Make sure the printer is off. If you have pin-feed paper loaded, remove it so you can open the printer's rear cover.
2. Open the DIP switch cover at the left rear of the printer, under the rear cover. See Figure E-1.
3. Locate the block of switches (SW1 or SW2) you need to change. The DIP switch label on the inside cover identifies default switch settings. Open DIP switches point towards the back of the printer; closed DIP switches point towards the front.
4. With a small screwdriver or pen, flip the appropriate switch.
5. Replace the DIP switch cover. Reload pin-feed paper. Then close the rear and front covers.

Warning Do not adjust switch block SW3 yourself. Only authorized Apple dealer technicians should adjust that block.

Table E-2
Default settings for SWI

Switch	Setting	Concern	Default
1	Open	Character set	American
2	Open	Character set	American
3	Open	Character set	American
4	Open	Page length	66 lines
5	Open	Skip perforation	No
6	Closed	Characters per inch	Fixed (12 cpi)
7	Open	Characters per inch	Fixed (12 cpi)
8	Open	Line feed after carriage return	None

Table E-3
Default settings for SW2

Switch	Setting	Concern	Default
1	Open	Baud	19,200
2	Open	Baud	19,200
3	Open	Communications protocol	DTR (handshake)
4	Open	Option card	No card
5	Open	Cut Sheet Feeder	
6	Open	Cut Sheet Feeder	
7	Open	Cut Sheet Feeder with envelope attachment	
8	Open	Auto load position (form feed)	⅙ inch above print line

Important Note these common DIP switch setting changes:

- If you have an Apple II, SW2-1 and SW2-2 should be closed.
- If you have an AppleTalk Option card, SW2-4 should be closed.
- If you want to use the Print Quality button to produce proportional pitch, SW1-6 and SW1-7 should be closed. Letter Quality is only available in proportional pitch.
- If you want to load paper to 1⅛ inch above the print line, SW2-8 should be closed.
- If you have both an 80-column card and a Super Serial Card attached, SW1-5 must be closed so you can print in 80-column format.

To explore the other available DIP switch options, see Appendix C.

Using control characters and escape sequences

You can change various settings on the ImageWriter LQ by sending the printer either a **control character** or an escape sequence; both of these send instructions. For example, change to boldface type, issue a form feed, and return to normal type are all instructions that you can send to the printer in an escape sequence.

This section discusses commonly used escape and control character sequences. See the Quick Reference Card for a complete listing.

With members of the Apple II family, you can communicate these instructions to the printer by pressing certain keys (after a PR#1 or as a setup string) or by writing commands into a program. For example, typing Control-L as a setup string sends a single character instruction telling the printer to perform a form feed.

❖ *Macintosh note:* You can command the printer through programs on a Macintosh, but not through typing a direct command, even though some Macintosh keyboards have an Escape key (Esc).

If you wanted to write a program to send a form feed instruction to the printer, you would write a line using the control character's ASCII code. (The form feed character's ASCII code is 12.) For example, an Applesoft program might have the line

```
40 PRINT CHR$(12)
```

❖ *ASCII codes:* ASCII stands for the *American Standard Code for Information Interchange.* This code is a standard character set used by many computers and peripheral devices to process and communicate data. Appendix D has a complete list of all ASCII codes.

You can also send escape sequence characters directly to the printer (in an application program or after a PR#1 instruction). For example, to have the ImageWriter LQ print in boldface type, you would press

```
Esc !
```

In a program, you would need to supply the ASCII codes for escape (27) and for ! (33). As an alternative, you could enclose the exclamation point in quotation marks—"!". Thus, your program line would look like this:

```
50 PRINT CHR$(27); CHR$(33)
```

or this

```
50 PRINT CHR$(27); "!"
```

For example, the sequence "Esc a 1 Esc p" selects proportional-pitch Draft Quality and prints at 144 dpi.

Commonly used printer instructions

This section gives the most commonly used control codes and escape sequences. For other codes, see the reference card at the back of this manual and the *ImageWriter LQ Reference* manual. A sample configuration program follows these instructions.

❖ *Note:* If you have an application program that you need to **configure** for printing, pay close attention to the following codes. Configuration programs often prompt you for information such as the code for boldface type, for underlining, and so on.

When typing control sequences directly, do not include the spaces between the symbols or the hyphens that separate the word Control from the control character. Esc means press the Esc key and then release it. Control means press the Control key and hold it down while pressing the character key.

❖ *Note:* Uppercase and lowercase are meaningful when writing escape sequences. That is, "Esc N" and "Esc n" are two different instructions. If you don't have an Esc key, note that Control-[will generate the same ASCII code (27).

Character case makes no difference when writing control codes; Control-n and Control-N send the same instruction.

Table E-4
Turning special features on and off

Feature	On	On (ASCII)	Off	Off (ASCII)
Boldface (2x1 matrix), normal	Esc !	27 33	Esc "	27 34
Underlining	Esc X	27 88	Esc Y	27 89
Superscripts	Esc x	27 120	Esc z	27 122
Subscripts	Esc y	27 121	Esc z	27 122
Half-height characters*	Esc w	27 119	Esc W	27 87
Slashed zeros	Esc D Control-@ Control-A	27 68 0 1	Esc Z Control-@ Control-A	27 90 0 1

* Half-height characters look best when printed in conjunction with 17 cpi.

Table E-5
Selecting special features

Feature	Access	ASCII Equivalent	
Character size (fixed-width pitch)			
Extended (9 cpi)	Esc n	27	110
Pica (10 cpi)	Esc N	27	78
Elite (12 cpi)	Esc E	27	69
Semicondensed (13.4 cpi)	Esc e	27	101
Condensed (15 cpi)	Esc q	27	113
Ultracondensed (17 cpi)	Esc Q	27	81
Proportional spacing (Draft, NLQ, and LQ)			
Proportional-2 (Pica)	Esc p	27	112
Proportional-1 (Elite)	Esc P	27	80
Lines per inch			
6 lines per inch	Esc A	27	65
8 lines per inch	Esc B	27	66
Print quality*			
Draft	Esc a 1	27	97 49
Near Letter Quality †	Esc a 0	27	97 48
Near Letter Quality	Esc a 2	27	97 50
Letter Quality, proportional	Esc a 3	27	97 51

* These codes override the Print Quality button on the control panel.
† This is the Near Letter Quality code for the ImageWriter II. The ImageWriter LQ recognizes both Esc a 0 and Esc a 2 for NLQ.

Table E-6
Selecting language fonts

Language	Access	ASCII Equivalent
American	Esc Z Control-G Control-@	27 90 7 0
British	Esc Z Control-D Control-@ Esc D Control-C Control-@	27 90 4 0 27 68 3 0
German	Esc Z Control-C Control-@ Esc D Control-D Control-@	27 90 3 0 27 68 4 0
French	Esc Z Control-A Control-@ Esc D Control-F Control-@	27 90 1 0 27 68 6 0
Swedish	Esc Z Control-B Control-@ Esc D Control-E Control-@	27 90 2 0 27 68 5 0
Italian	Esc Z Control-F Control-@ Esc D Control-A Control-@	27 90 6 0 27 68 1 0
Spanish	Esc D Control-G Control-@	27 68 7 0
Danish	Esc Z Control-E Control-@ Esc D Control-B Control-@	27 90 5 0 27 68 2 0

Note: Selection of the alternate language sets is controlled either by DIP switch settings or by software commands. Software commands override DIP switch settings.

Table E-7
Alternate language fonts

Language	Characters											
American	#	$	@	[	\	]	^	`	{	|	}	~
British	£	$	@	[	\	]	^	`	{	|	}	~
German	#	$	§	Ä	Ö	Ü	^	`	ä	ö	ü	ß
French	£	$	à	°	ç	§	^	`	é	ù	è	¨
Swedish	#	$	@	Ä	Ö	Å	^	`	ä	ö	å	~
Italian	£	$	§	°	ç	é	^	ù	à	ò	è	ì
Spanish	£	$	§	¡	Ñ	¿	^	`	°	ñ	ç	~
Danish	#	$	@	Æ	Ø	Å	^	`	æ	ø	å	~
Decimal	35	36	64	91	92	93	94	96	123	124	125	126
Hexadecimal	$23	$24	$40	$5B	$5C	$5D	$5E	$60	$7B	$7C	$7D	$7E

Note: To type a Spanish hyphen, press the single quotation mark key.

Selecting color

The color options work only when you have installed a color ribbon. The color option escape sequence instruction is Esc K n. The ASCII equivalent is 27 75 d.

Here, the letter *n* represents a color access number you must enter and *d* is the ASCII equivalent:

Color	Number (*n*)	ASCII code (*d*)
Black	0	48
Yellow	1	49
Magenta	2	50
Cyan	3	51
Orange (yellow & magenta)	4	52
Green (yellow & cyan)	5	53
Purple (magenta & cyan)	6	54

Selecting Cut Sheet Feeder bins

These escape sequence commands select only the bins, and do not cause any paper feeding. There is no special sequence for the envelope attachment.

Table E-8
Selecting Cut Sheet Feeder bins

Bin	Access	ASCII equivalent
Bin 1	Esc @ 0	27 64 48
Bin 2	Esc @ 1	27 64 49
Bin 3	Esc @ 2	27 64 50

Setting left margin

The escape sequence instruction for setting the left margin is Esc L nnn. The ASCII equivalent is 27 76.

nnn stands for any three-digit number. For example, if you were to enter Esc L 035, the printer would begin printing in the 36th character position, calculated from the zero position (not first position) marked by the vertical black mark on the paper bail.

See the section "Working With Margins and Print Alignment" in Chapter 7 for background.

Pushing a page to top of form

The escape sequence instruction for pushing a page to top of form is Esc v. The ASCII equivalent is 27 118.

See the section "Working With Margins and Print Alignment" in Chapter 7 for background.

A sample BASIC program

This program, written in Applesoft BASIC, gives a brief demonstration of how to turn various printer commands off and on and ends with a form feed to eject the printed page.

```
10 Rem Demo Printer Controls
20 Print CHR$(4); "PR#1": Rem send to printer
30 Let Esc$ = CHR$(27): Rem save some keystrokes
40 Print "This is the default font."
50 Print ESC$; CHR$(33): Rem bold on
60 Print "This is boldface"
70 Print ESC$; "X": Rem underline on
80 Print "and this is underlined boldface"
90 Print ESC$; CHR$(34): Rem bold off
100 Print "and this is underline only."
110 Print ESC$; "Y": Rem underline off
120 Print "Back to default."
130 Print ESC$; CHR$(81): Rem ultracondensed
140 Print "No boldface, no underline for an
  ultracondensed character size."
150 Print "Okay, push the paper."
160 Print CHR$(12): Rem Form Feed
170 Print ESC$; "E": Rem Elite type on
180 Print CHR$(4); "PR#0": Rem back to the screen
```

❖ *More information:* The Quick Reference Card at the back of this book contains a complete list of control codes, escape sequences, and DIP switch settings. Appendix C contains complete ImageWriter LQ printer and interface specifications. The *ImageWriter LQ Reference* manual has detailed programming information.

Glossary

alignment notches: The notches on the printer that indicate where to position the left edge of a sheet of paper.

AppleTalk System Connector: A piece of equipment that connects a device to an AppleTalk network. The connector consists of a connection box, a short cable, and an 8-pin, 9-pin, or 25-pin plug (the plug size depends on the variety of Macintosh).

AppleTalk Personal Network: The AppleTalk connectors, cables, cable extenders, and software that link computers and peripheral devices, such as printers or file servers, together in a communication network.

Applesoft BASIC: An extended version of the BASIC programming language used with the Apple II family of computers.

application program: A program that applies a computer's capabilities to some particular task, such as word processing, data base management, graphics, or spreadsheet work. Compare **system software.**

application software: A collective term for **application programs.**

ASCII: An acronym for *American Standard Code for Information Interchange*, pronounced *ASK-ee.* A code for representing text characters and other data inside a computer and between a computer and any peripheral device.

back cover: The cover at the rear of the ImageWriter LQ that protects the forms tractor.

back out: A method of retracting pin-feed paper on the push tractor, without removing the paper from the printer, to make printing a single cut sheet easy.

baud: A unit of data transmission speed: the number of signal events per second. Often, but not always, equivalent to *bits per second.*

bit: A contraction of *binary digit.* The smallest unit of data. A bit is either a zero or a one, an off or an on. The ImageWriter LQ takes a data byte composed of 8 bits.

bit image: A series of bits that represent a graphic image in the Macintosh.

bit map: A locator that points to the boundary rectangle, the coordinates, and the row width of a bit image. Used by the Macintosh to construct graphic images and fonts.

bottom paper-feed slot: This slot, at the bottom of the ImageWriter LQ, is indicated by triangular icons on either side of the printer. It allows pin-feed paper to be fed up through a slotted table into the printer.

buffer: An area of the computer's memory used as a *holding area* where information can be stored by one program or device and then read out by another at a different speed.

built-in fonts: Fonts that are built into the ImageWriter LQ printer. An Apple II computer prints with the built-in fonts on an ImageWriter LQ. A Macintosh computer substitutes fonts from the System file for the built-in fonts when printing Faster or Best Quality.

byte: A unit of information, often amounting to a single text character. A byte consists of eight bits.

cable: An insulated bundle of wires with connectors on the ends. Examples are serial cables, disk drive cables, and AppleTalk cables.

cable extender: A small plastic adapter with an AppleTalk socket on either end that allows you to connect two AppleTalk cables together.

card: See **peripheral card.**

carriage return: An ASCII character (decimal 13) that ordinarily causes a printer or display device to print the character following it at the left margin.

character: Any symbol that has a widely understood meaning and thus can convey information. Some characters—such as letters, numbers, and punctuation—can be displayed on the monitor screen and printed on a printer. Compare **control character.**

character code: A number used to represent a character for processing by a computer system.

character image: An arrangement of bits that defines a character in a font.

character pitch: The number of characters per inch printed on a horizontal line.

character set: The entire set of characters that a printer can print.

Chooser: A desk accessory that lets you print from any attached printer for which you have **printer resources** on the startup disk. You also use Chooser to designate the port to which a printer is attached. Chooser replaces the older Choose Printer accessory.

circuit board: A collection of integrated circuits (chips) wired together on a board.

command: An instruction that causes the computer to perform some action. A command can be typed from a keyboard, selected from a menu with a hand-held device (such as a mouse), or embedded in a program.

command code: One or more characters whose function is to change the way a program or device acts (as opposed to text, which is simply printed).

communications protocol: A format or set of rules for sending and receiving data.

computer paper: See **pin-feed paper.**

configuration: The hardware and software elements that constitute a computer system.

configure: To change software or hardware actions by changing settings. For example, you give software the necessary settings for communicating with a printer. You can *configure* hardware (a printer or interface card) by resetting physical elements like DIP switches or jumper blocks. Configurations can also be set or reset in software.

connection box: A small box at one end of an AppleTalk connector. Cables plug into the box, allowing network signals to flow through the box.

continuous-form paper: See **pin-feed paper.**

control character: A nonprinting character that controls or modifies the way information is printed or displayed. In the Apple II family, control characters have ASCII values between 0 and 31, and are typed from the keyboard by holding down the Control key while pressing some other key. In the Macintosh family, the Command key performs a similar function. Some control characters act as commands to the printer. Compare **escape sequence.**

control code: One or more nonprinting characters—included in a text file—whose function is to change the way a printer prints the text. For example, a program may use certain control codes to turn boldface printing on and off. See **control character.**

control panel: On the ImageWriter LQ, the cluster of buttons and lights near the lower-right corner of the printer.

Control Panel: On the Macintosh and Apple IIGS, the software accessory through which you can set things like button-click speed and speaker sound.

current startup disk: The disk containing the system files the Macintosh is currently using. Its icon always appears in the top-right corner of the desktop.

Cut Sheet Feeder: An optional accessory of the ImageWriter LQ, consisting of one, two, or three bins and a forward collator that automatically feeds and collates cut sheet paper for you. It holds up to 100 sheets of paper per bin.

data byte: The basic unit of data the computer sends to the printer.

data byte length: The number of bits in a data byte. The ImageWriter LQ receives data in 8-bit data bytes.

Data Terminal Ready: One of the handshake lines in a data transmission interface. Also, a name for the default communications protocol for the ImageWriter LQ; also known as *DTR* or *hardware handshake.* See **hardware handshake.**

default: A value, action, or setting that a computer system assumes, unless the user gives an explicit instruction to the contrary. For example, unless told otherwise, the ImageWriter LQ begins printing with a left margin set to the default value of zero.

DIP switch: *DIP* is an acronym for *dual in-line package.* A small block containing a number of switches. Setting these switches sets options on the device of which the switch is a part, like a printer or an interface card.

document: Whatever you create with application programs—information you enter, modify, view, or save. See also **file.**

Draft Quality: A high-speed, low-density print quality on the ImageWriter LQ.

driver: A file in a System Folder that tells the computer how to work with a device. A term used synonymously with **printer resource.**

8-pin, minicircular connector: The small, round connector on serial interface and AppleTalk cables that plugs into peripherals and the Modem and Printer ports on the Macintosh Plus, Macintosh SE, and Macintosh II. Also known as an *8-pin mini-DIN connector.*

eject: To move paper out of the printer. You can eject paper by pressing the Form Feed button or by turning the platen knob clockwise.

end-of-line character: Any character that tells the printer that the preceding text constitutes a full line and may now be printed.

envelope attachment: The attachment to the Cut Sheet Feeder that automatically feeds envelopes into the ImageWriter LQ.

Error light: The red light that indicates a problem with the printer, such as being out of paper.

escape code: A sequence of characters that begins with an escape character and constitutes a complete command. Usually synonymous with **escape sequence.**

escape sequence: A sequence of keystrokes or characters beginning with the Escape key (Esc), or with the ASCII code for the escape character. Such sequences issue commands to the printer that position the cursor and otherwise control text formatting in a printout.

expansion slot: A connector inside some computers in which a peripheral card can be installed. Used for increasing functionality. Sometimes called a *peripheral slot.*

fan-fold paper: See **pin-feed paper.**

file: Any named, ordered collection of information stored on a disk. Application programs and operating systems on disks are files. You make a file when you create text or graphics, give the material a name, and save it to disk; in this sense, synonymous with **document.**

font: In typography, a complete set of type in one size and style of character. In computer usage, a collection of letters, numbers, punctuation marks, and other typographical symbols with a consistent appearance. The size can be changed readily. See **font scaling.**

Font/DA Mover: An application that allows you to add or remove fonts and desk accessories from a disk's System file or from a font or desk accessory file.

font scaling: A method of font size translation used by Macintosh system software to produce high-density printed output. Font scaling ratios vary according to printer resolutions. Font scaling occurs only when the exact size requested is not available. A size close to that required may produce acceptable quality output.

font size: The size of a font of characters in **points;** equivalent to the distance between the ascent line of one line of text and the ascent line of the next line of single-spaced text. Examples of font size are 12 point and 18 point.

format: The general shape and appearance of a printer's output, including page size, character width and spacing, line spacing, and other design matters.

form feed: An ASCII character (decimal 12) that causes a printer or other paper-handling device to advance to the top of the next page.

Form Feed button: A button on the control panel that advances a whole sheet of paper, aligning the top edge of the paper with the top-of-form mark on the paper guide.

friction feed: A paper-feed lever setting that turns off the pin-feed mechanism and engages the rollers that drive single sheets of paper using friction between the platen and the paper.

front cover: The lid that covers the front of the ImageWriter LQ. Lift the front cover to gain access to the ribbon cartridge. The front cover must be firmly in place or the ImageWriter LQ will not print.

graphics: Displayed or printed pictures or images, as opposed to text.

grounding plug: A plug that has a third (grounding) pin for safety.

hardware handshake: A protocol that tells the computer to start or stop sending data by setting the DTR (Data Terminal Ready) line logic state. The ImageWriter LQ changes the line's state depending on the capacity of its input buffer. Also known as the *Data Terminal Ready* protocol. Compare **XON/XOFF.**

hexadecimal: The representation of numbers in terms of powers of sixteen, using the ten digits 0 through 9 and the six letters A through F. Often used instead of decimal numbers in programming and commonly referred to as *hex.* Programmers precede hex numbers with a dollar sign ($), for example, $14 or $C9.

high ASCII characters: ASCII characters with decimal values ranging from 128 through 255. Called *high* because the first, or high, bit of each character is set to 1 (for *on*) rather to 0 (for *off*).

icon: An image that graphically represents an object, a concept, or a message.

ImageWriter II/LQ AppleTalk Option card: An interface card that enables the printer it's installed in to serve as many as 31 computers on an AppleTalk network.

impact dot matrix printer: A printer, like the ImageWriter LQ, that forms characters with patterns of dots using the impact of print head wires on a ribbon.

installation: The process of adding information to the System file or System Folder of a disk.

installed font: A font in a specific size that you install in the System file of a startup disk with the Font/DA Mover or with installation software.

interface: Hardware or software that links the computer to a device such as a printer or modem.

interface card: See **peripheral card.**

internal fonts: See **built-in fonts.**

K: Short for *kilobyte.* One K equals 1024 bytes.

last form tear off: A method of removing the last printed sheet witout advancing the paper forward a full page. Used with pin-feed paper loaded on the push tractor when DIP switch SW2-8 is set to ON.

Letter Quality: A high-density print quality on the ImageWriter LQ.

line feed: The ASCII character (decimal 10) that causes the printer to move the paper forward by one line.

Line Feed button: A button on the control panel that advances paper one line at a time.

line feed pitch: The number of lines of text printed per vertical inch.

Macintosh 3X font: A font that is required by the Macintosh System file to produce high-density printed text. The Macintosh uses a ratio of 3:1 for ImageWriter LQ fonts.

microprocessor: A small, integrated circuit component that performs a complete set of computing functions. The computer's brain.

modem: Acronym for *MOdulator/DEModulator;* a peripheral device through which a computer can send and receive data over telephone lines.

Modem port: One of two serial interface ports on the Macintosh computers and on the Apple IIc and IIGS.

multipart forms: Preprinted forms consisting of an original and one or more attached copies. Can be purchased in pin-feed paper format.

Near-Letter Quality: A medium-speed, medium-density print quality on the ImageWriter LQ.

network: A collection of interconnected, individually controlled computers, together with the hardware and software used to connect them. Networks allow users to share data and peripheral devices such as printers and storage media to exchange electronic mail, and so on. AppleTalk is an office network.

9-pin plug: A standard plug, having a maximum of nine connector wires (pins), used to connect various devices to a computer. The AppleTalk 9-pin plug for the Macintosh 512 actually uses only 4 pins.

On/Off switch: The switch that you press to turn the printer on or off. The switch is located on the right side of the ImageWriter LQ, behind the platen knob.

output: Data transferred from a computer to an external device such as a video display, printer, disk drive, or modem.

override: To modify or cancel one instruction with another. For example, you might override a DIP switch setting with an escape sequence.

paper bail: The small shaft that runs across the top of the platen. Its two rollers hold the paper next to the platen.

paper clamps: The clamps that hold pin-feed paper on form-feed tractors.

paper-feed lever: The lever next to the platen knob. The lever's position determines how the printer moves paper. In its forward position the lever is set for pin feed; in its back position the lever is set for friction feed.

paper guide: The clear plastic plate that rides between the print head and the platen.

paper load: A function performed by the Form Feed button to load and position paper automatically. The default paper load aligns a sheet of paper with the top-of-form line on the printer paper guide and printing begins ⅙ inch below the top edge of the paper. When DIP switch SW2-8 is changed to on, a form feed advances the top edge of the paper 1⅙ inch above the print line.

paper separator: The wire form that keeps paper entering from the rear on the pull tractor separate from paper exiting to the rear.

paper thickness lever: The lever at the left end of the platen that sets the friction-feed mechanism for one to five sheets of paper. The rear position (#1) is for a single sheet of 16- to 24-pound bond; the frontmost position (#5) is for thick multipart forms.

parallel interface: An interface that transmits multiple bits simultaneously (usually in one byte lengths). Compare **serial interface.**

parity: A redundant bit added to a data byte to check for transmission errors. The ImageWriter LQ does not read a parity bit.

peripheral card: A removable printed circuit board that plugs into an expansion slot in a computer. Such cards can either transfer computer data to a peripheral device, such as a printer or modem, or expand the computer's own capabilities by adding extra memory or an extra microprocessor.

pin-feed: A paper-feed lever setting that turns on the tractor pin-feed mechanism to drive pin-feed paper into the printer.

pin-feed alignment icon: The icon on the printer case that shows you where to position the left edge of a sheet of pin-feed paper.

pin-feed alignment notch: The notch on the back edge of the printer case that shows you where to position the left edge of a sheet of pin-feed paper fed onto the pull tractor.

pin-feed paper: Special paper that has sprocket holes along both edges. The holes are used to advance paper automatically on a printer. Perforations separate each sheet and the individual sheets can be folded like the letter Z for stacking. Also known as *fan-fold paper, continuous-form paper,* or *computer paper.*

pitch: The distance between printed characters. ImageWriter LQ pitch is either fixed or proportional.

platen: The rubber roller that serves as a backing for the paper during printing and paper loading.

platen knob: The knob at the right side of the printer. Turning the knob clockwise advances paper into and out of the printer.

point: A unit of measurement for type. One point equals approximately 1/72 inch. 12 points equal one pica.

port: A socket on the back panel of the computer where you can plug in a cable to connect a peripheral device, another computer, or a network.

power cord: The cord that connects the printer to its source of electricity.

Power light: The green light that tells you when the printer is turned on.

power socket: The socket at the back of the printer into which you plug the power cord.

PR#: In the Apple II family of computers, the PR# command sends output to a slot. For example, PR#1 sends output to the device located in slot 1. PR#0 returns output to the video display.

print head: The printer part that causes dots to be printed by striking the ribbon against the paper.

print line: The bottom line on the paper guide that indicates where the printer begins printing on the paper. The print line is ⅛ inch below the top-of-form line and the top edge of the paper.

Printer port: A socket on the back of your computer marked by a printer icon. The Printer port, in addition to being a connection for a printer, also serves as the usual attachment point for an AppleTalk connector on Macintosh computers.

printer resource: A printer-specific file in the System Folder that lets you print on a corresponding printer attached to the computer. Sometimes called a *printer driver.*

printout: Text and graphics printed on paper by a printer.

Print Quality light: A set of indicators on the control panel that show whether Draft, Near Letter, or Letter Quality printing is selected for a document produced on an Apple II. Macintosh print quality is determined by software settings.

protocol: See **communications protocol.**

pull tractor: A tractor that pulls pin-feed paper into the printer from either the rear or the bottom of the printer and feeds it out the rear.

push tractor: A tractor that pushes pin-feed paper under the platen when the paper is fed into the rear of the printer and feeds it out the top.

RAM: See **random-access memory**

random access memory (RAM): Memory that retains data only so long as power to the memory remains on. Also known as *working memory.* When you load a program and data into the computer, you load them into RAM. Likewise, what you type at the keyboard goes into RAM. The ImageWriter LQ has 2K of RAM which receives and holds data from the computer. You can "write" information into RAM and "read" it back.

Read Me document: A document on a disk that provides you with late-breaking information about the product. The Read Me document on the *ImageWriter LQ Disk 1* contains important information about fonts.

RS232: A common data communications interface standard. The ImageWriter LQ follows this standard.

Select button: The button that determines whether the printer can accept data from the computer or instructions from other buttons on the control panel.

Select light: A light on the control panel that indicates that the printer can receive data from a computer. None of the other control panel buttons work when the Select light is on. When the Select light is off, all buttons work, but the printer cannot print.

serial interface: An interface that transmits data sequentially, one bit at a time. Compare **parallel interface.**

serial interface cable: The cable that connects the serial ports of two devices, such as those of a computer and a printer. See **serial interface.**

serial interface card: An interface card that transmits data sequentially, one bit at a time.

serial interface socket: The ImageWriter LQ socket that accepts the serial interface cable's 8-pin, minicircular connector.

setup string: A group of characters that sends a format command to a printer. Some application programs, such as spreadsheets, give you the option of changing a format setting, such as character width, by entering a setup string before printing.

Shannon text: A standard test pattern used to evaluate printer speed. Used on the ImageWriterLQ for evaluating proportional-pitch letter quality printing speed.

shielded cable: A cable with a special metallic wrapping around its wires. This wrapping reduces radio frequency interference.

single-sheet alignment icon: An icon on the single-sheet guide for left paper edge alignment.

single-sheet guide: A moveable plastic piece in the rear panel of the printer, used for single-sheet paper loading.

single-sheet paper: Any standard-sized paper that is unconnected to other sheets. Compare with **pin-feed paper.**

slot: See **expansion slot.**

soft switch: Also called a *software switch;* a means of changing some feature of the computer from within a program. Specifically, a soft switch is a location in memory that produces some special effect whenever its contents are read or written. **DIP switch** settings on ImageWriter printers can be overridden with soft switches.

software: A collective term for programs, the instructions that tell the computer what to do. Software includes applications like word processing programs and programs that control the activities of the computer and its peripherals.

start bit: In serial data transmission, the one bit preceding a data byte that indicates the beginning of a character.

startup disk: A disk with all the necessary program files—such as the Finder and System files contained in the System Folder in Macintosh—to set the computer into operation.

stop bit: In serial data transmission, the one or two bits following a data byte that indicate the end of a character.

system software: Programs or instructions for system-wide operation. System software manages system resources such as memory, printers, and desktop operations.

text: Information presented in the form of alphabetic, numeric, and punctuation characters. Compare **graphics.**

top margin: The distance from the top edge of a page to the first printed line of text.

top of form: The position of the print line relative to the top edge of the paper when you turn on the printer.

top-of-form command: A command causing a printer to feed paper until the paper advances to a preset position relative to the top of a single sheet.

tractor: A belt with pins that guides pin-feed paper into the printer. The ImageWriter LQ has two tractors, one for each column of pin holes.

tractor release lever: In the down position, the lever locks its tractor into position. The up position frees the tractor for adjustment to a different paper width.

wires: The 27 elements in the print head that strike the ribbon and create a dot pattern on the paper. The dot pattern can be a text character or part of a graphic image.

XON/XOFF: A communications protocol that tells the computer to start or stop sending data by sending the appropriate character: either an XON or XOFF. The ImageWriter LQ sends an XOFF when its input buffer is nearly full and an XON when it has room for more data. Compare **hardware handshake.**

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zeros (slashed), control codes/escape sequences for 201

ImageWriter® LQ Quick Reference Card for Apple® II Users

Control codes and escape sequences

Function	Keystrokes	ASCII code	Comment
Character size (pitch)			
Extended	Esc n	27 110	9 characters per inch
Pica	Esc N	27 78	10 characters per inch
Elite	Esc E	27 69	12 characters per inch
Pica proportional	Esc p	27 112	
Elite proportional	Esc P	27 80	
Semicondensed	Esc e	27 101	13.4 characters per inch
Condensed	Esc q	27 113	15 characters per inch
Ultracondensed	Esc Q	27 81	17 characters per inch
Set n dots	Esc n	27 d	Between proportional characters (n=1 to 6)
Set spacing to n dots	Esc s n	27 115 d	Between proportional character (n=0 to 9)
Print formatting			
Underline begin	Esc X	27 88	
Underline end	Esc Y	27 89	
Boldface begin	Esc !	27 33	
Boldface end	Esc "	27 34	
Headline begin	Control-N	14	
Headline end	Control-O	15	
Superscript begin	Esc x	27 120	
Superscript end	Esc z	27 122	
Subscript begin	Esc y	27 121	
Subscript end	Esc z	27 122	
Half-high begin	Esc w	27 119	
Half-high end	Esc W	27 87	
Slashed zero begin	Esc D Control-@ Control-A	27 68 0 1	
Slashed zero end	Esc Z Control-@ Control-A	27 90 0 1	
Repeat character	Esc R nnn c	27 82 ddd d	Print character c nnn times

Function	Keystrokes	ASCII Code
International language fonts		
American	Esc Z Control-G Control-@	27 90 7 0
British	Esc Z Control-D Control-@ Esc D Control-C Control-@	27 90 4 0 27 68 3 0
German	Esc Z Control-C Control-@ Esc D Control-D Control-@	27 90 3 0 27 68 4 0
French	Esc Z Control-A Control-@ Esc D Control-F Control-@	27 90 1 0 27 68 6 0
Swedish	Esc Z Control-B Control-@ Esc D Control-E Control-@	27 90 2 0 27 68 5 0
Italian	Esc Z Control-F Control-@ Esc D Control-A Control-@	27 90 6 0 27 68 1 0
Spanish	Esc D Control-G Control-@	27 68 7 0
Danish	Esc Z Control-E Control-@ Esc D Control-B Control-@	27 90 5 0 27 68 2 0
Print quality *		
Draft	Esc a 1	27 97 49
Near Letter Quality †	Esc a 0	27 97 48
Near Letter Quality	Esc a 2	27 97 50
Letter Quality, Proportional	Esc a 3	27 97 51

* These codes override the Print Quality button on the control panel.

† This is the Near Letter Quality code for the ImageWriter II. The ImageWriter LQ recognizes both Esc a 0 and Esc a 2 for NLQ.

Colors		
Black	Esc K 0	27 75 48
Yellow	Esc K 1	27 75 49
Magenta	Esc K 2	27 75 50
Cyan	Esc K 3	27 75 51
Orange	Esc K 4	27 75 52
Green	Esc K 5	27 75 53
Purple	Esc K 6	27 75 54

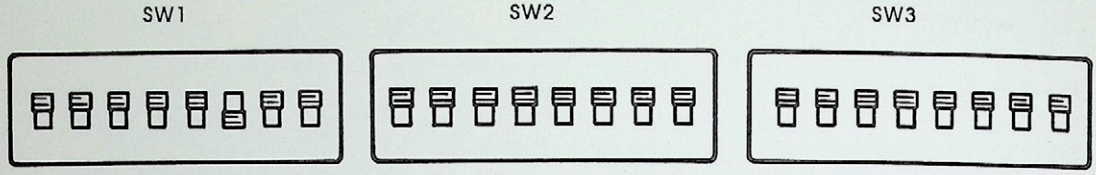
Function	Keystrokes	ASCII code	Comment
Cut Sheet Feeder bins			
Bin 1	Esc @ 0	27 64 48	(Codes select bins only;
Bin 2	Esc @ 1	27 64 49	they do not cause paper
Bin 3	Esc @ 2	27 64 50	feeding.)
Printer direction			
Left to right only	Esc >	27 62	
Bidirectional	Esc <	27 60	Default
Backspace and print	Control-H c	8 d	Backspace and print character c
Positioning			
Feed to top of form	Control-L	12	
Set top of form	Esc v	27 118	
Set left margin	Esc L nnn	27 76 ddd	nnn=character position
Lines per inch			
6 lines per inch	Esc A	27 65	
8 lines per inch	Esc B	27 66	
Distance between lines	Esc T nn	27 84 dd	nn/144 (nn = 01 to 99)
Set form length	Esc H nnnn	27 72 dddd	In increments of nnnn/144 (page length/144)
End of line			
End of line at carriage return only	Esc Z @ Control-@	27 90 64 0	
End of line at carriage return or line feed/form feed	Esc D @ Control-@	27 68 64 0	
Line feeds			
No carriage return before line feed	Esc 11	27 108 49	
Add carriage return before line feed	Esc 10	27 108 48	
Forward line feed	Esc f	27 102	
Reverse line feed	Esc r	27 114	Limited to ½ when Cut Sheet Feeder attached
Buffer controls			
Cancel unprinted text	Control-X	24	
No line feed at buffer	Esc Z _ Control-@	27 90 32 0	Overflow (_ = space character)
Line feed added at buffer	Esc D _ Control-@	27 68 32 0	Overflow (_ = space character)

Return Address: _____

Place First Class

Function	Keystrokes	ASCII code	Comment
Tabbing controls			
Set horizontal tabs	Esc (a,b,n,... , .	27 40 d 44 d 44 d 44 ... 44 46	a, b, n = column numbers through n*th* column
Set one additional tab	Esc u n	27 117 d	
Clear selected tabs	Esc) a,b,n,... , .	27 41 d 44 d 44 d 44 ... 44 46	a, b, n = column numbers through n*th* column
Clear all horizontal tabs	Esc 0	27 48	
Bit image graphics			
Print next nnnn bytes as low resolution image graphic	Esc G nnnn	27 71 dddd	nnnn = number of bytes
Print next nnn x 8 bytes as low-resolution image graphic	Esc g nnn	27 103 ddd	
Repeat low-resolution dot pattern nnnn times	Esc V nnnn	27 86 dddd	1 byte pattern
Print next nnnn x 3 bytes as high-resolution image graphic	Esc C nnnn	27 67 dddd	nnnn = number of bytes
Repeat high-resolution dot pattern nnnn times	Esc U nnnn	27 85 dddd	3 byte pattern
Begin printing at dot position nnnn (low-resolution)	Esc F nnnn	27 70 dddd	
Begin printing at dot position nnnn (high-resolution)	Esc h nnnn	27 104 dddd	
Miscellaneous			
Paper error detector off	Esc O	27 79	
Paper error detector on	Esc o	27 111	Default
Software reset power on defaults	Esc c	27 99	Restore power on defaults
Self ID	Esc ?	27 63	Check printer configuration
Font ID	Esc = n	27 61 d	n = 0, 1, 2, 3
Begin printing optional character set	Esc K	27 107	

DIP switch settings



Function	Switch	Switch	Switch
International language settings	**SW1-1**	**SW1-2**	**SW1-3**
American (default)	Open	Open	Open
Italian	Closed	Open	Open
Danish	Open	Closed	Open
British	Closed	Closed	Open
German	Open	Open	Closed
Swedish	Closed	Open	Closed
French	Open	Closed	Closed
Spanish	Closed	Closed	Closed

Form length	**SW1-4**
Form length 11 inches (66 lines; default)	Open
Form length 12 inches	Closed

Perforation skip	**SW1-5**
Perforation skip inactive (default)	Open
Perforation skip active	Closed

Character pitch	**SW1-6**	**SW1-7**
10 characters per inch, fixed	Open	Open
12 characters per inch, fixed (default)	Closed	Open
17 characters per inch, fixed	Open	Closed
160 dots per inch (proportional, Draft and NLQ)	Closed	Closed
216 dots per inch (proportional, LQ)	Closed	Closed

Note: SW1-6 and SW1-7 must be closed for proportional-pitch printing.

Carriage return	**SW1-8**
Carriage return only (default)	Open
Carriage return plus line feed	Closed

Function	Switch	Switch	Switch
Communications rate		**SW2-1**	**SW2-2**
19,200 baud (default)		Open	Open
9600 baud		Closed	Closed
2400 baud		Open	Closed
1200 baud		Closed	Open
Protocol		**SW2-3**	
Hardware handshake protocol (DTR; default)		Open	
XON/XOFF protocol		Closed	
Option card		**SW2-4**	
Option disabled (no option card; default)		Open	
Option enabled		Closed	
Cut Sheet Feeder	**SW2-5**	**SW2-6**	**SW2-7**
One bin attached	Open	Open	Closed
Two bins attached	Closed	Open	Closed
Three bins attached	Open or closed	Closed	Closed
One bin and envelope	Open	Open	Open
Two bins and envelope	Closed	Open	Open
Three bins and envelope	Open or closed	Closed	Open
Auto Paper Load		**SW2-8**	
Load ⅙ inch above print line (default)		Open	
Load 1⅙ inch above print line (use with pull tractor)		Closed	

❖ *Note:* Open DIP switches point towards the back of the printer; closed DIP switches point towards the front.

Warning

Do not adjust DIP switch block SW3 yourself. Only authorized Apple dealer technicians should adjust that block of switches.

Tell Apple About Your .....

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you need the name of an authorized Apple dealer in your ar

☐ Would you like to tell Apple what you think about this prod
product, we would like to hear from you. You can help us t
questionnaire below and marking the appropriate boxes on t
have more than one response to a question, mark all the box
Apple. Include additional pages of comments if you wish.

1. How would you rate the ImageWriter LQ? (**1**=poor. . .**6**=exc
2. Where did you purchase the ImageWriter LQ? (**1**=dealer, **2**=
4=education purchase, **5**=department store, **6**=other)
3. What were the primary reasons for purchasing the ImageWri
3=Print quality, **4**=color capability, **5**=Tractor feeding, **6**=Pr
4. What computers do you use with your printer? (**1**=Macintosh
5=Apple IIe, **6**=Apple IIgs, **7**=other)
5. Does your ImageWriter LQ replace another printer? (**1**=No, **2**
3=replaces a LaserWriter, **4**=replaces another Apple printer,
6. Where is your printer used most often? (**1**=work, **2**=home,
7. What software applications will you be using most often wit
(**1**=word processor/mail merge, **2**=spreadsheet, **3**=database,
8. What other products do you use with your printer? (**1**=1-bin
3=3-bin Cut Sheet Feeder, **4**=envelope attachment, **5**=color
9. How easy was the ImageWriter LQ to set up? (**1**=easy. . .**6**=
10. Did you use the manual to help you set up? (**1**=yes. . .**6**=nc
11. How helpful was the manual in learning how to set up? (**1**=
12. How much of the manual did you read? (**1**=cover to cover.
13. How would you rate the ImageWriter LQ manual overall? (**1**=
14. How easy was the manual to read and understand? (**1**=diffic
15. How easy was it to find the information you needed? (**1**=dif
16. Please describe any errors or inconsistencies you may have fo
17. What suggestions do you have for improving the ImageWrite

Thanks for your time and effort.

M Network Pub

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P.O. Box 1143
Cupertino, CA 95014
USA

Place
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Tell Apple About Your ImageWriter LQ

☐ Please contact your authorized Apple dealer when you have questions about your Apple products. Dealers are trained by Apple Computer and are given the resources to handle service and support for all Apple products. If you need the name of an authorized Apple dealer in your area, call toll-free: 800-538-9696.

☐ Would you like to tell Apple what you think about this product? After you have had an opportunity to use this product, we would like to hear from you. You can help us to improve our products by responding to the questionnaire below and marking the appropriate boxes on the card at the right with a #2 lead pencil. If you have more than one response to a question, mark all the boxes that apply. Please detach the card and mail it to Apple. Include additional pages of comments if you wish.

1. How would you rate the ImageWriter LQ? (**1**=poor. . .**6**=excellent)
2. Where did you purchase the ImageWriter LQ? (**1**=dealer, **2**=consortium, **3**=corporate purchase, **4**=education purchase, **5**=department store, **6**=other)
3. What were the primary reasons for purchasing the ImageWriter LQ? (**1**=15″ wide carriage, **2**=Cut Sheet Feeder, **3**=Print quality, **4**=color capability, **5**=Tractor feeding, **6**=Price)
4. What computers do you use with your printer? (**1**=Macintosh Plus, **2**=Macintosh SE, **3**=Macintosh II, **4**=Apple IIc, **5**=Apple IIe, **6**=Apple IIGs, **7**=other)
5. Does your ImageWriter LQ replace another printer? (**1**=No, **2**=replaces an Imagewriter II, **3**=replaces a LaserWriter, **4**=replaces another Apple printer, **5**=replaces a printer from another vendor)
6. Where is your printer used most often? (**1**=work, **2**=home, **3**=school, **4**=other)
7. What software applications will you be using most often with your ImageWriter LQ? (**1**=word processor/mail merge, **2**=spreadsheet, **3**=database, **4**=forms, **5**=graphics, technical drawing, **6**=other)
8. What other products do you use with your printer? (**1**=1-bin Cut Sheet Feeder, **2**=2-bin Cut Sheet Feeder, **3**=3-bin Cut Sheet Feeder, **4**=envelope attachment, **5**=color ribbon, **6**=AppleTalk, **7**=none)
9. How easy was the ImageWriter LQ to set up? (**1**=easy. . .**6**=difficult)
10. Did you use the manual to help you set up? (**1**=yes. . .**6**=no)
11. How helpful was the manual in learning how to set up? (**1**=not helpful. . .**6**=very helpful)
12. How much of the manual did you read? (**1**=cover to cover. . .**6**=none of it)
13. How would you rate the ImageWriter LQ manual overall? (**1**=poor. . .**6**=excellent)
14. How easy was the manual to read and understand? (**1**=difficult. . .**6**=very easy)
15. How easy was it to find the information you needed? (**1**=difficult. . .**6**=very easy)
16. Please describe any errors or inconsistencies you may have found in the manual. (Page numbers would be helpful.)
17. What suggestions do you have for improving the ImageWriter LQ?

Thanks for your time and effort.

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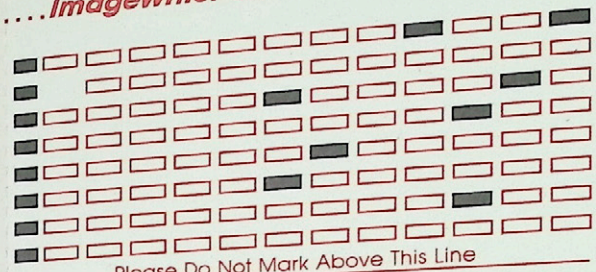

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Tuck end flap inside back cover when using manual.

Apple® ImageWriter® LQ Owner's Guide

THE APPLE PUBLISHING SYSTEM

This Apple manual was written, edited, and composed on a desktop publishing system using the Apple Macintosh™ Plus and Microsoft® Word. Proof and final pages were created on the Apple LaserWriter® Plus. POSTSCRIPT™, the LaserWriter's page-description language, was developed by Adobe Systems Incorporated.

Text type is ITC Garamond® (a downloadable font distributed by Adobe Systems). Display type is ITC Avant Garde Gothic®. Bullets are ITC Zapf Dingbats®. Program listings are set in Apple Courier, a monospaced font.

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TLX 171-576

030-3068-B
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Update to ImageWriter LQ Owner's Guide

YOUR APPLE® IMAGEWRITER® LQ HAS BEEN MODIFIED TO MAKE IT EASIER TO use. Some of these modifications are not reflected in the *ImageWriter LQ Owner's Guide* you received with your printer. As you use your owner's guide, please keep in mind the information presented in this update. (You might want to jot down in your copy of the manual the few changes explained here.)

"Open Me First"

Your *ImageWriter LQ Owner's Guide* provides all the information you need to set up your printer. However, you'll find an abbreviated version of that information in the "Open Me First" foldout that came with your printer. The foldout is meant to streamline the setting-up process for you. Use the "Open Me First" foldout if you want a quick guide to setting up your printer.

HyperCard stack

The ImageWriter LQ provides a variety of ways for paper to move through the printer. You choose a paper path according to your own needs. To find information on loading the paper in the manner appropriate for the task you've chosen, see the HyperCard® stack titled "Using Your ImageWriter LQ" on *ImageWriter LQ Disk 1*. By using the stack, you can go quickly and directly to the relevant information without using your owner's guide. The stack also includes a comprehensive trouble-shooting guide, should you run into problems using your printer.

To use the stack, you'll need HyperCard version 1.2 or later (see your authorized Apple dealer or representative).

Disk contents

The *ImageWriter LQ Owner's Guide* refers to the contents of the three disks that accompany the printer. The contents of the three disks have changed. Here is a list of the current contents of the disks:

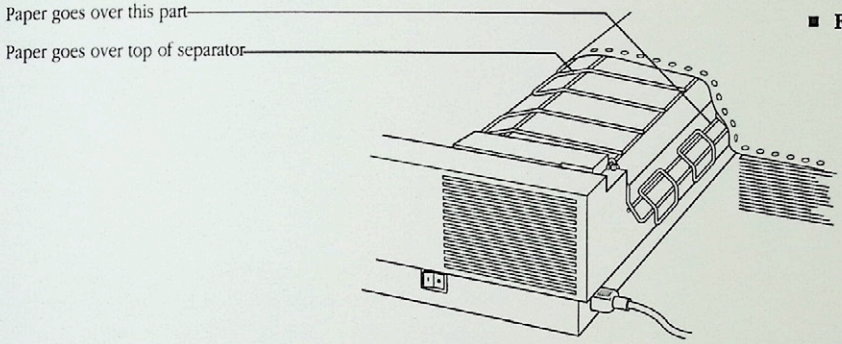
ImageWriter LQ Disk 1	LQ ImageWriter resource Using Your ImageWriter LQ
LQ Fonts Disk 2	Times Font Helvetica Font Font/DA Mover
LQ Fonts Disk 3	Courier Font Symbol Font Font/DA Mover

Paper separator

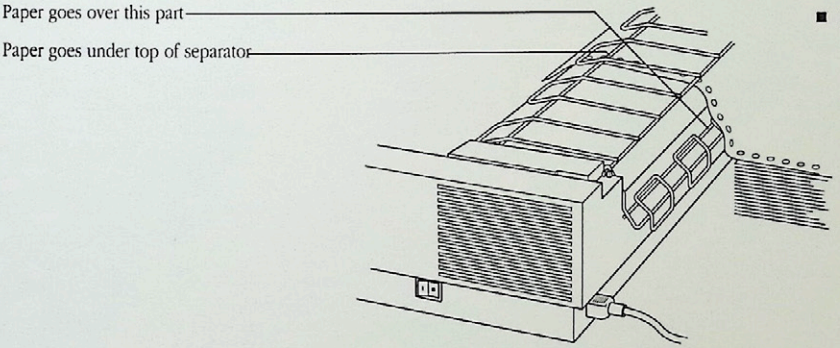
Your *ImageWriter LQ Owner's Guide* provides instructions for installing the paper separator and explains that the separator is necessary only if you use rear-feed paper paths.

The paper separator now comes installed. Accordingly, you can ignore the installation instructions. It has also been redesigned to stay in the printer at all times, regardless of the paper path you choose.

Refer to these illustrations when loading paper:



■ **Figure 1** Push tractor



■ **Figure 2** Pull tractor

DIP switch settings

In Chapter 2 of the the *ImageWriter LQ Owner's Guide,* you'll find instructions for changing the DIP switch settings on switch number SW2-8. The DIP switch has been set to the closed position.With the switch in this position, the printer advances pin-feed paper far enough so that you can easily tear off the last form. This switch setting also eliminates the possibility of printing on the previous page or on the platen, when using applications with no preset top margin.

Ignore the instructions for setting the switch if you want to tear off the last form of your pin-feed paper, or if your application does not have a preset top margin. If, on the other hand, you do *not* want the paper to advance past the top-of-form mark on the paper guide, use the instructions in the "Changing DIP Switch SW2-8" section of Chapter 2. Be sure to set the switch to Open.

Cut Sheet Feeder

The optional Cut Sheet Feeder for the ImageWriter LQ has been redesigned. The *ImageWriter LQ Owner's Guide* provides instructions for setting up and installing the Cut Sheet Feeder on your printer. In these instructions, the manual refers to the forward collator as a separate piece that you need to install on the feeder. This step is no longer necessary. The forward collator is no longer a separate piece; it is now a molded part of the Cut Sheet Feeder itself.

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